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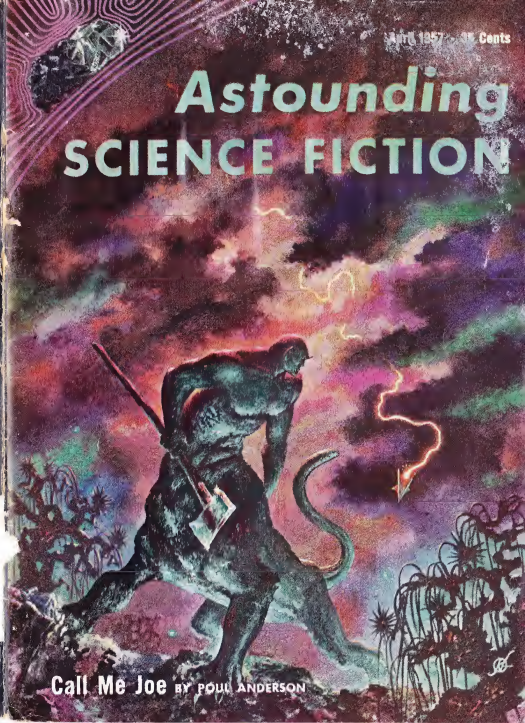
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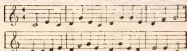
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Astounding SCIENCE FICTION

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SYMBOL: Transformation under heat and pressure.

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THE FALSE IMMORTALS

Last month, we ran a short story, "Man of God," by Stephen Bartholomew; I wanted to comment on the idea he presented at the time, but since a goodly number of readers have said they read these editorial pages first, it would have spoiled the punch of Bartholomew's excellent story.

I had never spotted the point he made in that story; if you recall, Bartholomew pointed out that cultures haven't discovered that they are mortal, and therefore haven't yet developed morality, a "fear of God," in the sense of recognizing that there exists a Power in the Universe superior to even the greatest empire. The point is, I think, something that sociologists, psychol-

ogists and historians alike may find much value in; I, at least, had never seen it made before.

But it seems to me to be quite valid; cultures, even the most deeply religious cultures, make the egregious error of confusing Society (*their* society) with God. They believe they are immortal; *other* cultures died, of course, but that was because they were so inferior. *This* culture is based on the Ultimate Wisdom of God, and so will live forever.

Hitler's Thousand Year Reich was unusual in one respect; he did suggest that there would be an end to it. "The Eternal City," Rome of the Latins, died a long time ago,

of course. But "There'll Always Be an England!"

Yes?

The glaciers were there only a short while back; they'll be there again, probably. The Channel is one of the more recent features of Earth's geography.

And that's discussing the mere physical topography of the island. Science fiction does give a new look at things; the span of attention isn't confined to one, two, or even a dozen human lifetimes. There *won't* always be an England; there won't be a United States for any long period of time, either . . . if you count time in the terms we must if we think of the Race of Man. The Race is at least three hundred thousand years old; and the Race of Man won't always be here, either. We're evolving; our descendants won't always be just like us.

The difficulty is this: A culture is a group-entity, made up of the interactions of the individuals. It is *not* composed of individuals; it's composed of the *interactions* of individuals. A human being is the resultant of the interactions of his cells; he is not his cells, and does not die when his cells die. The cells live for varying periods; some a matter of a week or so, and some very much longer. (There are indications that nerve tissues live the entire life span of the individual.) The skin I have today was not there last month.

Although all the individual members pass, the system of interactions

does not. The eddy formed by water going down a drain is not made up of the water molecules, but of the interactions of the molecules. No molecule is important to it; the interactions of all of them are.

A culture, similarly, is the pattern of interactions of the individual members—the *pattern* of interactions, and *not* the individuals. The individuals are replaceable—they are unimportant, as are the individual water molecules in the eddy. The pattern has an existence not at the level of the individuals; the individuals may be mortal, but the pattern—each culture seems to feel—is Immortal.

Now a cat nurses her kittens not so much because she loves the cute, sweet, warm little fur-balls, but because her mammary glands get swollen and ache if they're not emptied. A cat doesn't have the faintest conception of what we humans mean by "motherhood"; to her, a kitten is a convenient device for relieving uncomfortable pressure in her mammary glands.

Also, three billion years of evolution have planted a set of purely mechanical behavior patterns in her, quite beyond her comprehension, that she obeys because she "wants" to. A modern automatic washing machine also has a set of instincts built in at its creation. It "wants" to wash clothes when the button is pushed.

Early Man did not have the faintest idea that copulation was related

ASTOUNDING SCIENCE FICTION

in any way to child-bearing, any more than a cat does. The females had as complete a set of instincts as cats do now; they were pre-programmed, at birth themselves, to take care of the babies they bore. The males wanted females. Data: females wouldn't stay around males that didn't let them care for the children they bore. Conclusion: females have to be allowed to care for children. Data: males that protect the children of their females are preferred by females. Conclusion: the young born by females must be protected by males who want to keep said females handy.

Early man didn't have "father love" for the children his mate bore; he darned well had to care for them if he wanted to have a handy mate hanging around. They were, so far as he was aware, his *wards*, not his children.

Of course, early man didn't consider himself mortal, either. *Other* organisms died, but he never had, had he? Proved that *he* was immortal, didn't it?

Don't consider early man abysmally stupid; modern man pulls exactly the same argument. You late-comers to science fiction wouldn't remember it, but as of 1935 modern man was busy saying that, since there never has been a spaceship, that proves there can't be, and that since there never had been atomic weapons, that proved there couldn't be.

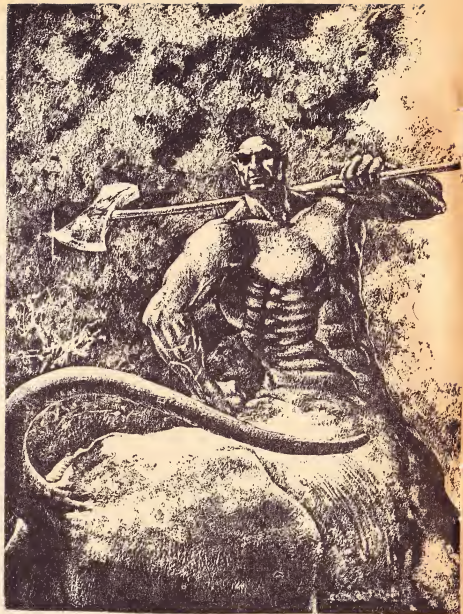
When Man finally did begin to have the temerity to consider the

idea that he, himself might die—some new problems arose. As Brundage pointed out, one answer was the concept of an after-life, a non-physical immortality of Spirit. This was the aspect Bartholomew's "Man of God" was concerned with, as applied to cultures—that haven't yet learned that they, too, must die.

Early man didn't want children; why should he? They were an infernal nuisance, ate a lot of food, and caused no end of trouble having to be protected. Also his mate became ungainly, less useful, and less agile in the process of production. Pure debit, so far as he could see.

When Man discovered his own mortality—children took on a different value. They represented one visible, understandable pseudo-immortality. The main trouble was that about half of them weren't useful duplicates of himself at all, but turned out to be duplicates of his mate, instead. And, moreover, the sons were never very satisfactory duplicates—they always were imperfect copies, different somehow, and wouldn't learn to be just like their father, as they should. They insisted on having some of the mother's characteristics, too. Frustrating, but true; a man couldn't get a proper duplicate of himself—it was always a hybrid, half himself and half something else.

Cultures don't want children; not being aware of their mortality, they see no value whatever in children,
(Continued on page 161)



CALL ME JOE

If someone could just work out a definition for the term "human being," maybe we could decide whether or not Joe really was human, in the end. . . .

BY POUL ANDERSON

Illustrated by Freas

The wind came whooping out of eastern darkness, driving a lash of ammonia dust before it. In minutes, Edward Anglesey was blinded.

He clawed all four feet into the broken shards which were soil, hunched down and groped for his little smelter. The wind was an idiot bassoon in his skull. Something whipped across his back, drawing blood, a tree yanked up by the roots and spat a hundred miles. Lightning cracked, immensely far overhead where clouds boiled with night.

As if to reply, thunder toned in the ice mountains and a red gout of flame jumped and a hillside came booming down, spilling itself across the valley. The earth shivered.

Sodium explosion, thought Angle-



sey in the drumbeat noise. The fire and the lightning gave him enough illumination to find his apparatus. He picked up tools in muscular hands, his tail gripped the trough, and he battered his way to the tunnel and thus to his dugout.

It had walls and roof of water, frozen by sun-remoteness and compressed by tons of atmosphere jammed onto every square inch. Ventilated by a tiny smokehole, a lamp of tree oil burning in hydrogen made a dull light for the single room.

Anglesey sprawled his slate-blue form on the floor, panting. It was no use to swear at the storm. These ammonia gales often came at sunset, and there was nothing to do but wait them out. He was tired anyway.

It would be morning in five hours or so. He had hoped to cast an axhead, his first, this evening, but maybe it was better to do the job by daylight.

He pulled a dekapod body off a shelf and ate the meat raw, pausing for long gulps of liquid methane from a jug. Things would improve once he had proper tools; so far, everything had been painfully grubbed and hacked to shape with teeth, claws, chance icicles, and what detestably weak and crumbling fragments remained of the spaceship. Give him a few years and he'd be living as a man should.

He sighed, stretched, and lay down to sleep.

Somewhat more than one hundred

and twelve thousand miles away, Edward Anglesey took off his helmet.

He looked around, blinking. After the Jovian surface, it was always a little unreal to find himself here again, in the clean quiet orderliness of the control room.

His muscles ached. They shouldn't. He had not really been fighting a gale of several hundred miles an hour, under three gravities and a temperature of 140 Absolute. He had been here, in the almost nonexistent pull of Jupiter V, breathing oxynitrogen. It was Joe who lived down there and filled his lungs with hydrogen and helium at a pressure which could still only be estimated because it broke aneroids and deranged piezoelectrics.

Nevertheless, his body felt worn and beaten. Tension, no doubt—psychosomatics—after all, for a good many hours now he had, in a sense, been Joe, and Joe had been working hard.

With the helmet off, Anglesey held only a thread of identification. The esprojector was still tuned to Joe's brain but no longer focused on his own. Somewhere in the back of his mind, he knew an indescribable feeling of sleep. Now and then, vague forms or colors drifted in the soft black—dreams? Not impossible, that Joe's brain should dream a little when Anglesey's mind wasn't using it.

A light flickered red on the esprojector panel, and a bell whined

electronic fear. Anglesey cursed. Thin fingers danced over the controls of his chair, he slewed around and shot across to the bank of dials. Yes — there — K-tube oscillating again! The circuit blew out. He wrenched the faceplate off with one hand and fumbled in a drawer with the other.

Inside his mind, he could feel the contact with Joe fading. If he once lost it entirely, he wasn't sure he could regain it. And Joe was an investment of several million dollars and quite a few highly skilled man-years.

Anglesey pulled the offending K-tube from its socket and threw it on the floor. Glass exploded. It eased his temper a bit, just enough so he could find a replacement, plug it in, switch on the current again—as the machine warmed up, once again amplifying, the Joe-ness in the back alleys of his brain strengthened.

Slowly, then, the man in the electric wheel chair rolled out of the room, into the hall. Let somebody else sweep up the broken tube. To hell with it. To hell with everybody.

Jan Cornelius had never been farther from Earth than some comfortable Lunar resort. He felt much put upon, that the Psionics Corporation should tap him for a thirteen-months exile. The fact that he knew as much about esprojectors and their cranky innards as any other

man alive, was no excuse. Why send anyone at all? Who cared?

Obviously the Federation Science Authority did. It had seemingly given those bearded hermits 'a blank check on the taxpayer's account.

Thus did Cornelius grumble to himself, all the long hyperbolic path to Jupiter. Then the shifting accelerations of approach to its tiny inner satellite left him too wretched for further complaint.

And when he finally, just prior to disembarkation, went up to the greenhouse for a look at Jupiter, he said not a word. Nobody does, the first time.

Arne Viken waited patiently while Cornelius stared. *It still gets me, too*, he remembered. *By the throat. Sometimes I'm afraid to look.*

At length Cornelius turned around. He had a faintly Jovian appearance himself, being a large man with an imposing girth. "I had no idea," he whispered. "I never thought . . . I had seen pictures, but—"

Viken nodded. "Sure, Dr. Cornelius. Pictures don't convey it."

Where they stood, they could see the dark broken rock of the satellite, jumbled for a short ways beyond the landing slip and then chopped off sheer. This moon was scarcely even a platform, it seemed, and cold constellations went streaming past it, around it. Jupiter lay across a fifth of that sky, softly ambrous, banded with colors, spotted with the shadows of planet-sized moons and

with whirlwinds as broad as Earth. If there had been any gravity to speak of, Cornelius would have thought, instinctively, that the great planet was falling on him. As it was, he felt as if sucked upward, his hands were still sore where he had grabbed a rail to hold on.

"You live here . . . all alone . . . with this?" He spoke feebly.

"Oh, well, there are some fifty of us all told, pretty congenial," said Viken. "It's not so bad. You sign up for four-cycle hitches—four ship arrivals—and believe it or not, Dr. Cornelius, this is my third enlistment."

The newcomer forbore to inquire more deeply. There was something not quite understandable about the men on Jupiter V. They were mostly bearded, though otherwise careful to remain neat; their low-gravity movements were somehow dreamlike to watch; they hoarded their conversation, as if to stretch it through the year and month between ships. Their monkish existence had changed them—or did they take what amounted to vows of poverty, chastity, and obedience, because they had never felt quite at home on green Earth?

Thirteen months! Cornelius shuddered. It was going to be a long cold wait, and the pay and bonuses accumulating for him were scant comfort now, four hundred and eighty million miles from the sun.

"Wonderful place to do research," continued Viken. "All the facilities, hand-picked colleagues, no distrac-

tions . . . and of course—" He jerked his thumb at the planet and turned to leave.

Cornelius followed, wallowing awkwardly. "It is very interesting, no doubt," he puffed. "Fascinating. But really, Dr. Viken, to drag me way out here and make me spend a year-plus waiting for the next ship . . . to do a job which may take me a few weeks—"

"Are you sure it's that simple?" asked Viken gently. His face swiveled around, and there was something in his eyes that silenced Cornelius. "After all my time here, I've yet to see any problem, however complicated, which when you looked at it the right way didn't become still more complicated."

They went through the ship's air lock and the tube joining it to the station entrance. Nearly everything was underground. Rooms, laboratories, even halls had a degree of luxuriousness—why, there was a fireplace with a real fire in the common room! God alone knew what *that* cost!

Thinking of the huge chill emptiness where the king planet laired, and of his own year's sentence, Cornelius decided that such luxuries were, in truth, biological necessities.

Viken showed him to a pleasantly furnished chamber which would be his own. "We'll fetch your luggage soon, and unload your psionic stuff. Right now, everybody's either talk-

ing to the ship's crew or reading his mail."

Cornelius nodded absently and sat down. The chair, like all low-gee furniture, was a mere spidery skeleton, but it held his bulk comfortably enough. He felt in his tunic, hoping to bribe the other man into keeping him company for a while. "Cigar? I brought some from Amsterdam."

"Thanks." Viken accepted with disappointing casualness, crossed long thin legs and blew grayish clouds.

"Ah . . . are you in charge here?"

"Not exactly. No one is. We do have one administrator, the cook, to handle what little work of that type may come up. Don't forget, this is a research station, first, last, and always."

"What is your field, then?"

Viken frowned. "Don't question anyone else so bluntly, Dr. Cornelius," he warned. "They'd rather spin the gossip out as long as possible with each newcomer. It's a rare treat to have someone whose every last conceivable reaction hasn't been— No, no apologies to me. 'S all right. I'm a physicist, specializing in the solid state at ultra-high pressures." He nodded at the wall. "Plenty of it to be observed—there!"

"I see." Cornelius smoked quietly for a while. Then: "I'm supposed to be the psionics expert, but frankly, at present I've no idea why your machine should misbehave as reported."

"You mean those, uh, K-tubes have a stable output on Earth?"

"And on Lunar, Mars, Venus . . . everywhere, apparently, but here." Cornelius shrugged. "Of course, psibcams are always persnickety, and sometimes you get an unwanted feedback when— No. I'll get the facts before I theorize. Who are your psimen?"

"Just Anglesey, who's not a formally trained esman at all. But he took it up after he was crippled, and showed such a natural aptitude that he was shipped out here when he volunteered. It's so hard to get anyone for Jupiter V that we aren't fussy about degrees. At that, Ed seems to be operating Joe as well as a Ps.D. could."

"Ah, yes. Your pseudojovian. I'll have to examine that angle pretty carefully too," said Cornelius. In spite of himself, he was getting interested. "Maybe the trouble comes from something in Joe's biochemistry. Who knows? I'll let you into a carefully guarded little secret, Dr. Viken: psionics is not an exact science."

"Neither is physics," grinned the other man. After a moment, he added more soberly: "Not my brand of physics, anyway. I hope to make it exact. That's why I'm here, you know. It's the reason we're all here."

Edward Anglesey was a bit of a shock, the first time. He was a head, a pair of arms, and a disconcertingly intense, blue stare. The rest of him

was mere detail, enclosed in a wheeled machine.

"Biophysicist originally," Viken had told Cornelius. "Studying atmospheric spores at Earth Station when he was still a young man—accident, crushed him up, nothing below his chest will ever work again. Snappish type, you have to go slow with him."

Seated on a wisp of stool in the esprojector control room, Cornelius realized that Viken had been soft-pedaling the truth.

Anglesey ate as he talked, gracelessly, letting the chair's tentacles wipe up after him. "Got to," he explained. "This stupid place is officially on Earth time, GMT. Jupiter isn't. I've got to be here whenever Joe wakes, ready to take him over."

"Couldn't you have someone spell you?" asked Cornelius.

"Bah!" Anglesey stabbed a piece of prot and wagged it at the other man. Since it was native to him, he could spit out English, the common language of the station, with unmeasured ferocity. "Look here. You ever done therapeutic esping? Not just listening in, or even communication, but actual pedagogic control?"

"No, not I. It requires a certain natural talent, like yours." Cornelius smiled. His ingratiating little phrase was swallowed without being noticed by the scored face opposite him. "I take it you mean cases like, oh, re-educating the nervous system of a palsied child?"

"Yes, yes. Good enough example. Has anyone ever tried to suppress the child's personality, take him over in the most literal sense?"

"Good God, no!"

"Even as a scientific experiment?" Anglesey grinned. "Has any esprojector operative ever poured on the juice and swamped the child's brain with his own thoughts? Come on, Cornelius, I won't snitch on you."

"Well . . . it's out of my line, you understand." The psionist looked carefully away, found a bland meter face and screwed his eyes to that. "I have, uh, heard something about . . . well, yes, there were attempts made in some pathological cases to, uh, bull through . . . break down the patient's delusions by sheer force—"

"And it didn't work," said Anglesey. He laughed. "It *can't* work, not even on a child, let alone an adult with a fully developed personality. Why, it took a decade of refinement, didn't it, before the machine was debugged to the point where a psychiatrist could even 'listen in' without the normal variation between his pattern of thought and the patient's . . . without that variation setting up an interference scrambling the very thing he wanted to study. The machine has to make automatic compensations for the differences between individuals. We still can't bridge the differences between species.

"If someone else is willing to co-operate, you can very gently guide his thinking. And that's all. If you

try to seize control of another brain, a brain with its own background of experience, its own ego—you risk your very sanity. The other brain will fight back, instinctively. A fully developed, matured, hardened human personality is just too complex for outside control. It has too many resources, too much hell the subconscious can call to its defense if its integrity is threatened. Blazes, man, we can't even master our own minds, let alone anyone else's!"

Anglesey's cracked-voice tirade broke off. He sat brooding at the instrument panel, tapping the console of his mechanical mother.

"Well?" said Cornelius after a while.

He should not, perhaps, have spoken. But he found it hard to remain mute. There was too much silence—half a billion miles of it, from here to the sun. If you closed your mouth five minutes at a time, the silence began creeping in like fog.

"Well," gibed Anglesey. "So our pseudojovian, Joe, has a physically adult brain. The only reason I can control him is that his brain has never been given a chance to develop its own ego. I *am* Joe. From the moment he was 'born' into consciousness, I have been there. The psibeam sends me all his sense data and sends him back my motor-nerve impulses. But nevertheless, he has that excellent brain, and its cells are recording every trace of experience, even as yours and mine; his

synapses have assumed the topography which is my 'personality pattern.'

"Anyone else, taking him over from me, would find it was like an attempt to oust me myself from my own brain. It couldn't be done. To be sure, he doubtless has only a rudimentary set of Anglesey-memories—I do not, for instance, repeat trigonometric theorems while controlling him—but he has enough to be, potentially, a distinct personality.

"As a matter of fact, whenever he wakes up from sleep—there's usually a lag of a few minutes, while I sense the change through my normal psi faculties and get the amplifying helmet adjusted—I have a bit of a struggle. I feel almost a . . . a resistance . . . until I've brought his mental currents completely into phase with mine. Merely dreaming has been enough of a different experience to—"

Anglesey didn't bother to finish the sentence.

"I see," murmured Cornelius. "Yes, it's clear enough. In fact, it's astonishing that you can have such total contact with a being of such alien metabolism."

"I won't for much longer," said the esman sarcastically, "unless you can correct whatever is burning out those K-tubes. I don't have an unlimited supply of spares."

"I have some working hypotheses," said Cornelius, "but there's so little known about psibeam transmission—is the velocity infinite or



merely very great, is the beam strength actually independent of distance? How about the possible effects of transmission . . . oh, through the degenerate matter in the Jovian core? Good Lord, a planet where water is a heavy mineral and hydrogen is a metal! What do we know?"

"We're supposed to find out," snapped Anglesey. "That's what this whole project is for. Knowledge. Bull!" Almost, he spat on the floor. "Apparently what little we have learned doesn't even get

through to people. Hydrogen is still a gas where Joe lives. He'd have to dig down a few miles to reach the solid phase. And I'm expected to make a scientific analysis of Jovian conditions!"

Cornelius waited it out, letting Anglesey storm on while he himself turned over the problem of K-tube oscillation:

"They don't understand back on Earth. Even here they don't. Sometimes I think they refuse to understand. Joe's down there without much more than his bare hands.

He, I, we started with no more knowledge than that he could probably eat the local life. He has to spend nearly all his time hunting for food. It's a miracle he's come as far as he has in these few weeks—made a shelter, grown familiar with the immediate region, begun on metallurgy, hydrurgy, whatever you want to call it. What more do they want me to do, for crying in the beer?"

"Yes, yes—" mumbled Cornelius.
"Yes, I—"

Anglesey raised his white bony face. Something filmed over in his eyes.

"What—" began Cornelius.

"Shut up!" Anglesey whipped the chair around, groped for the helmet, slapped it down over his skull. "Joe's waking. Get out of here."

"But if you'll only let me work while he sleeps, how can I—"

Anglesey snarled and threw a wrench at him. It was a feeble toss, even in low-gee. Cornelius backed toward the door. Anglesey was tuning in the esprojector. Suddenly he jerked.

"*Cornelius!*"

"What is it?" The psionicist tried to run back, overdid it, and skidded in a heap to end up against the panel.

"K-tube again." Anglesey yanked off the helmet. It must have hurt like blazes, having a mental squeal build up uncontrolled and amplified in your own brain, but he said merely: "Change it for me. Fast. And then get out and leave me alone.

Joe didn't wake up of himself. Something crawled into the dugout with me—I'm in trouble down there!"

It had been a hard day's work, and Joe slept heavily. He did not wake until the hands closed on his throat.

For a moment, then, he knew only a crazy smothering wave of panic. He thought he was back on Earth Station, floating in null-gee at the end of a cable while a thousand frosty stars haloed the planet before him. He thought the great I-beam had broken from its moorings and started toward him, slowly, but with all the inertia of its cold tons, spinning and shimmering in the Earth-light, and the only sound himself screaming and screaming in his helmet trying to break from the cable the beam nudged him ever so gently but it kept on moving he moved with it he was crushed against the station wall nuzzled into it his mangled suit frothed as it tried to seal its wounded self there was blood mingled with the foam his blood *Joe roared.*

His convulsive reaction tore the hands off his neck and sent a black shape spinning across the dugout. It struck the wall, thunderously, and the lamp fell to the floor and went out.

Joe stood in darkness, breathing hard, aware in a vague fashion that the wind had died from a shriek to a low snarling while he slept.

The thing he had tossed away

mumbled in pain and crawled along the wall. Joe felt through lightlessness after his club.

Something else scabbled. The tunnel! They were coming through the tunnel! Joe groped blind to meet them. His heart drummed thickly and his nose drank an alien stench.

The thing that emerged, as Joe's hands closed on it, was only about half his size, but it had six monstrously taloned feet and a pair of three-fingered hands that reached after his eyes. Joe cursed, lifted it while it writhed, and dashed it to the floor. It screamed, and he heard bones splinter.

"Come on, then!" Joe arched his back and spat at them, like a tiger menaced by giant caterpillars.

They flowed through his tunnel and into the room, a dozen of them entered while he wrestled one that had curled itself around his shoulders and anchored its sinuous body with claws. They pulled at his legs, trying to crawl up on his back. He struck out with claws of his own, with his tail, rolled over and went down beneath a heap of them and stood up with the heap still clinging to him.

They swayed in darkness. The legged seething of them struck the dugout wall. It shivered, a rafter cracked, the roof came down. Anglesey stood in a pit, among broken ice plates, under the wan light of a sinking Ganymede.

He could see, now, that the monsters were black in color and that they had heads big enough to

accommodate some brain, less than human but probably more than apes. There were a score of them or so, they struggled from beneath the wreckage and flowed at him with the same shrieking malice.

Why?

Baboon reaction, thought Anglesey somewhere in the back of himself. See the stranger, fear the stranger, hate the stranger, kill the stranger. His chest heaved, pumping air through a raw throat. He yanked a whole rafter to him, snapped it in half, and twirled the iron-hard wood.

The nearest creature got its head bashed in. The next had its back broken. The third was hurled with shattered ribs into a fourth, they went down together. Joe began to laugh. It was getting to be fun.

"Yeee-ow! Ti-i-i-iger!" He ran across the icy ground, toward the pack. They scattered, howling. He hunted them until the last one had vanished into the forest.

Panting, Joe looked at the dead. He himself was bleeding, he ached, he was cold and hungry and his shelter had been wrecked . . . but, he'd whipped them! He had a sudden impulse to beat his chest and howl. For a moment, he hesitated—why not? Anglesey threw back his head and bayed victory at the dim shield of Ganymede.

Thereafter he went to work. First build a fire, in the lee of the spaceship—which was little more by now than a hill of corrosion. The

monster pack cried in darkness and the broken ground, they had not given up on him, they would return.

He tore a haunch off one of the slain and took a bite. Pretty good. Better yet if properly cooked. Heh! They'd made a big mistake in calling his attention to their existence! He finished breakfast while Ganymede slipped under the western ice mountains. It would be morning soon. The air was almost still, and a flock of pancake-shaped skyskimmers, as Anglesey called them, went overhead, burnished copper color in the first pale dawn-streaks.

Joe rummaged in the ruins of his hut until he had recovered the water-smelting equipment. It wasn't harmed. That was the first order of business, melt some ice and cast it in the molds of ax, knife, saw, hammer he had painfully prepared. Under Jovian conditions, methane was a liquid that you drank and water was a dense hard mineral. It would make good tools. Later on he would try alloying it with other materials.

Next—yes. To hell with the dug-out, he could sleep in the open again for a while. Make a bow, set traps, be ready to massacre the black caterpillars when they attacked him again. There was a chasm not far from here, going down a long ways toward the bitter cold of the metallic-hydrogen strata: a natural icebox, a place to store the several weeks' worth of meat his enemies would supply. This would give him leisure to— Oh, a hell of a lot!

Joe laughed, exultantly, and lay down to watch the sunrise.

It struck him afresh how lovely a place this was. See how the small brilliant spark of the sun swam up out of eastern fog-banks colored dusky purple and veined with rose and gold; see how the light strengthened until the great hollow arch of the sky became one shout of radiance; see how the light spilled warm and living over a broad fair land, the million square miles of rustling low forests and wave-blinking lakes and feather-plumed hydrogen geysers; and see, see, see how the ice mountains of the west flashed like blued steel!

Anglesey drew the wild morning wind deep into his lungs and shouted with a boy's joy.

"I'm not a biologist myself," said Viken carefully. "But maybe for that reason I can better give you the general picture. Then Lopez or Matsumoto can answer any questions of detail."

"Excellent," nodded Cornelius. "Why don't you assume I am totally ignorant of this project? I very nearly am, you know."

"If you wish," laughed Viken.

They stood in an outer office of the xenobiology section. No one else was around, for the station's clocks said 1730 GMT and there was only one shift. No point in having more, until Anglesey's half of the enterprise had actually begun gathering quantitative data.

The physicist bent over and took

a paperweight off a desk. "One of the boys made this for fun," he said, "but it's a pretty good model of Joe. He stands about five feet tall at the head."

Cornelius turned the plastic image over in his hands. If you could imagine such a thing as a feline centaur with a thick prehensile tail—The torso was squat, long-armed, immensely muscular; the hairless head was round, wide-nosed, with big deep-set eyes and heavy jaws, but it was really quite a human face. The overall color was bluish gray.

"Male, I see," he remarked.

"Of course. Perhaps you don't understand. Joe is the complete pseudojovian: as far as we can tell, the final model, with all the bugs worked out. He's the answer to a research question that took fifty years to ask." Viken looked sideways at Cornelius. "So you realize the importance of your job, don't you?"

"I'll do my best," said the psionist. "But if . . . well, let's say that tube failure or something causes you to lose Joe before I've solved the oscillation problem. You do have other pseudos in reserve, don't you?"

"Oh, yes," said Viken moodily. "But the cost—We're not on an unlimited budget. We do go through a lot of money, because it's expensive to stand up and sneeze this far from Earth. But for that same reason our margin is slim."

He jammed hands in pockets and

slouched toward the inner door, the laboratories, head down and talking in a low, hurried voice:

"Perhaps you don't realize what a nightmare planet Jupiter is. Not just the surface gravity—a shade under three gees, what's that? But the gravitational potential, ten times Earth's. The temperature. The pressure . . . above all, the atmosphere, and the storms, and the darkness!

"When a spaceship goes down to the Jovian surface, it's a radio-controlled job; it leaks like a sieve, to equalize pressure, but otherwise it's the sturdiest, most utterly powerful model ever designed; it's loaded with every instrument, every servomechanism, every safety device the human mind has yet thought up to protect a million-dollar hunk of precision equipment.

"And what happens? Half the ships never reach the surface at all. A storm snatches them and throws them away, or they collide with a floating chunk of Ice VII—small version of the Red Spot—or, so help me, what passes for a flock of *birds* rams one and stoves it in!

"As for the fifty per cent which does land, it's a one-way trip. We don't even try to bring them back. If the stresses coming down haven't sprung something, the corrosion has doomed them anyway. Hydrogen at Jovian pressure does funny things to metals.

"It cost a total of—about five million dollars—to set Joe, one pseudo, down there. Each pseudo to

follow will cost, if we're lucky, a couple of million more."

Viken kicked open the door and led the way through. Beyond was a big room, low-ceilinged, coldly lit and murmurous with ventilators. It reminded Cornelius of a nucleonics lab; for a moment he wasn't sure why, then recognized the intricacies of remote control, remote observation, walls enclosing forces which could destroy the entire moon.

"These are required by the pressure, of course," said Viken, pointing to a row of shields. "And the cold. And the hydrogen itself, as a minor hazard. We have units here duplicating conditions in the Jovian, uh, stratosphere. This is where the whole project really began."

"I've heard something about that," nodded Cornelius. "Didn't you scoop up airborne spores?"

"Not I." Viken chuckled. "Totti's crew did, about fifty years ago. Proved there was life on Jupiter. A life using liquid methane as its basic solvent, solid ammonia as a starting point for nitrate synthesis—the plants use solar energy to build unsaturated carbon compounds, releasing hydrogen; the animals eat the plants and reduce those compounds again to the saturated form. There is even an equivalent of combustion. The reactions involve complex enzymes and . . . well, it's out of my line."

"Jovian biochemistry is pretty well understood, then."

"Oh, yes. Even in Totti's day,

they had a highly developed biotic technology: Earth bacteria had already been synthesized, and most gene structures pretty well mapped. The only reason it took so long to diagram Jovian life processes was the technical difficulty, high pressure and so on."

"When did you actually get a look at Jupiter's surface?"

"Gray managed that, about thirty years ago. Set a televisor ship down, a ship that lasted long enough to flash him quite a series of pictures. Since then, the technique has improved. We know that Jupiter is crawling with its own weird kind of life, probably more fertile than Earth. Extrapolating from the airborne microorganisms, our team made trial syntheses of metazoans and—"

Viken sighed. "Damn it, if only there were intelligent native life! Think what they could tell us, Cornelius, the data, the— Just think back how far we've gone since Lavoisier, with the low-pressure chemistry of Earth. Here's a chance to learn a high-pressure chemistry and physics at least as rich with possibilities!"

After a moment, Cornelius murmured slyly: "Are you certain there *aren't* any Jovians?"

"Oh, sure, there could be several billion of them," shrugged Viken. "Cities, empires, anything you like. Jupiter has the surface area of a hundred Earths, and we've only seen maybe a dozen small regions. But we do know there aren't any Jovians

using radio. Considering their atmosphere, it's unlikely they ever would invent it for themselves—imagine how thick a vacuum tube has to be, how strong a pump you need! So it was finally decided we'd better make our own Jovians."

Cornelius followed him through the lab, into another room. This was less cluttered, it had a more finished appearance: the experimenter's haywire rig had yielded to the assured precision of an engineer.

Viken went over to one of the panels which lined the walls and looked at its gauges. "Beyond this lies another pseudo," he said. "Female, in this instance. She's at a pressure of two hundred atmospheres and a temperature of 194 Absolute. There's a . . . an umbilical arrangement, I guess you'd call it, to keep her alive. She was grown to adulthood in this, uh, fetal stage—we patterned our Jovians after the terrestrial mammal. She's never been conscious, she won't ever be till she's 'born.' We have a total of twenty males and sixty females waiting here. We can count on about half reaching the surface. More can be created as required.

"It isn't the pseudos that are so expensive, it's their transportation. So Joe is down there alone till we're sure that his kind *can* survive."

"I take it you experimented with lower forms first," said Cornelius.

"Of course. It took twenty years, even with forced-catalysis techniques, to work from an artificial

air-borne spore to Joe. We've used the psibeam to control everything from pseudo-insects on up. Interspecies control is possible, you know, if your puppet's nervous system is deliberately designed for it, and isn't given a chance to grow into a pattern different from the esman's."

"And Joe is the first specimen who's given trouble?"

"Yes."

"Scratch one hypothesis," Cornelius sat down on a workbench, dangling thick legs and running a hand through thin sandy hair. "I thought maybe some physical effect of Jupiter was responsible. Now it looks as if the difficulty is with Joe himself."

"We've all suspected that much," said Viken. He struck a cigarette and sucked in his cheeks around the smoke. His eyes were gloomy. "Hard to see how. The biotics engineers tell me *Pseudocentaurus Sapiens* has been more carefully designed than any product of natural evolution."

"Even the brain?"

"Yes. It's patterned directly on the human, to make psibeam control possible, but there are improvements—greater stability."

"There are still the psychological aspects, though," said Cornelius. "In spite of all our amplifiers and other fancy gadgets, psi is essentially a branch of psychology, even today . . . or maybe it's the other way around. Let's consider traumatic experiences. I take it the . . . the adult Jovian fetus has a rough trip going down?"

"The ship does," said Viken. "Not the pseudo itself, which is wrapped up in fluid just like you were before birth."

"Nevertheless," said Cornelius, "the two hundred atmospheres pressure here is not the same as whatever unthinkable pressure exists down on Jupiter. Could the change be injurious?"

Viken gave him a look of respect. "Not likely," he answered. "I told you the J-ships are designed leaky. External pressure is transmitted to the, uh, uterine mechanism through a series of diaphragms, in a gradual fashion. It takes hours to make the descent, you realize."

"Well, what happens next?" went on Cornelius. "The ship lands, the uterine mechanism opens, the umbilical connection disengages, and Joe is, shall we say, born. But he has an adult brain. He is not protected by the only half-developed infant brain from the shock of sudden awareness."

"We thought of that," said Viken. "Anglesey was on the psibeam, in phase with Joe, when the ship left this moon. So it wasn't really Joe who emerged, who perceived. Joe has never been much more than a biological waldo. He can only suffer mental shock to the extent that Ed does, because it *is* Ed down there!"

"As you will," said Cornelius. "Still, you didn't plan for a race of puppets, did you?"

"Oh, heavens, no," said Viken. "Out of the question. Once we know

Joe is well established, we'll import a few more esmen and get him some assistance in the form of other pseudos. Eventually females will be sent down, and uncontrolled males, to be educated by the puppets. A new generation will be born normally— Well, anyhow, the ultimate aim is a small civilization of Jovians. There will be hunters, miners, artisans, farmers, housewives, the works. They will support a few key members, a kind of priesthood. And that priesthood will be esp-controlled, as Joe is. It will exist solely to make instruments, take readings, perform experiments, and tell us what we want to know!"

Cornelius nodded. In a general way, this was the Jovian project as he had understood it. He could appreciate the importance of his own assignment.

Only, he still had no clue to the cause of that positive feedback in the K-tubes.

And what could he do about it?

His hands were still bruised. *Ob, God*, he thought with a groan, for the hundredth time, *does it affect me that much? While Joe was fighting down there, did I really hammer my fists on metal up here?*

His eyes smoldered across the room, to the bench where Cornelius worked. He didn't like Cornelius, fat cigar-sucking slob, interminably talking and talking. He had about given up trying to be civil to the Earthworm.

The psionist laid down a

screwdriver and flexed cramped fingers. "Whuff!" he smiled. "I'm going to take a break."

The half-assembled esprojector made a gaunt backdrop for his wide soft body, where it squatted toad-fashion on the bench. Anglesey detested the whole idea of anyone sharing this room, even for a few hours a day. Of late he had been demanding his meals brought here, left outside the door of his adjoining bedroom-bath. He had not gone beyond for quite some time now.

And why should I?

"Couldn't you hurry it up a little?" snapped Anglesey.

Cornelius flushed. "If you'd had an assembled spare machine, instead of loose parts—" he began. Shrugging, he took out a cigar stub and relit it carefully; his supply had to last a long time. Anglesey wondered if those stinking clouds were blown from his mouth of malicious purpose. *I don't like you, Mr. Earthman Cornelius, and it is doubtless quite mutual.*

"There was no obvious need for one, until the other esmen arrive," said Anglesey in a sullen voice. "And the testing instruments report this one in perfectly good order."

"Nevertheless," said Cornelius, "at irregular intervals it goes into wild oscillations which burn out the K-tube. The problem is why. I'll have you try out this new machine as soon as it is ready, but frankly, I don't believe the trouble lies in electronic failure at all—or even in unsuspected physical effects."

"Where, then?" Anglesey felt more at ease as the discussion grew purely technical.

"Well, look. What exactly is the K-tube? It's the heart of the esprojector. It amplifies your natural psionic pulses, uses them to modulate the carrier wave, and shoots the whole beam down at Joe. It also picks up Joe's resonating impulses and amplifies them for your benefit. Everything else is auxiliary to the K-tube."

"Spare me the lecture," snarled Anglesey.

"I was only rehearsing the obvious," said Cornelius, "because every now and then it is the obvious answer which is hardest to see. Maybe it isn't the K-tube which is misbehaving. Maybe it is you."

"What?" The white face gaped at him. A dawning rage crept red across its thin bones.

"Nothing personal intended," said Cornelius hastily. "But you know what a tricky beast the subconscious is. Suppose, just as a working hypothesis, that way down underneath, you don't *want* to be on Jupiter. I imagine it is a rather terrifying environment. Or there may be some obscure Freudian element involved. Or, quite simply and naturally, your subconscious may fail to understand that Joe's death does not entail your own."

"Um-m-m—" *Mirabile dictu*, Anglesey remained calm. He rubbed his chin with one skeletal hand. "Can you be more explicit?"



"Only in a rough way," replied Cornelius. "Your conscious mind sends a motor impulse along the psibeam to Joe. Simultaneously, your subconscious mind, being scared of the whole business, emits the glandular - vascular - cardiac - visceral impulses associated with fear. These react on Joe, whose tension is transmitted back along the beam. Feeling Joe's somatic fear-symptoms, your subconscious gets still more

worried, thereby increasing the symptoms— Get it? It's exactly similar to ordinary neurasthenia, with this exception: that since there is a powerful amplifier, the K-tube, involved, the oscillations can build up uncontrollably within a second or two. You should be thankful the tube does burn out—otherwise your brain might do so!"

For a moment Anglesey was quiet. Then he laughed. It was a hard,

barbaric laughter. Cornelius started as it struck his eardrums.

"Nice idea," said the esman. "But I'm afraid it won't fit all the data. You see, I like it down there. I like being Joe."

He paused for a while, then continued in a dry impersonal tone: "Don't judge the environment from my notes. They're just idiotic things like estimates of wind velocity, temperature variations, mineral properties—insignificant. What I can't put in is how Jupiter looks through a Jovian's infrared-seeing eyes."

"Different, I should think," ventured Cornelius after a minute's clumsy silence.

"Yes and no. It's hard to put into language. Some of it I can't, because man hasn't got the concepts. But . . . oh, I can't describe it. Shakespeare himself couldn't. Just remember that everything about Jupiter which is cold and poisonous and gloomy to us is *right* for Joe."

Anglesey's tone grew remote, as if he spoke to himself:

"Imagine walking under a glowing violet sky, where great flashing clouds sweep the earth with shadow and rain strides beneath them. Imagine walking on the slopes of a mountain like polished metal, with a clean red flame exploding above you and thunder laughing in the ground. Imagine a cool wild stream, and low trees with dark coppery flowers, and a waterfall, methane-fall . . . whatever you like . . . leaping off a cliff, and the strong live wind shakes its mane full of

rainbows! Imagine a whole forest, dark and breathing, and here and there you glimpse a pale-red waver-ing will-o'-the-wisp, which is the life radiation of some fleet shy animal, and . . . and—"

Anglesey croaked into silence. He stared down at his clenched fists, then he closed his eyes tight and tears ran out between the lids.

"Imagine being *strong*!"

Suddenly he snatched up the helmet, crammed it on his head and twirled the control knobs. Joe had been sleeping, down in the night, but Joe was about to wake up and —roar under the four great moons till all the forest feared him?

Cornelius slipped quietly out of the room.

In the long brazen sunset light, beneath dusky cloud banks brooding storm, he strode up the hill slope with a sense of day's work done. Across his back, two woven baskets balanced each other, one laden with the pungent black fruit of the thorn tree and one with cable-thick creepers to be used as rope. The ax on his shoulder caught the waning sunlight and tossed it blindly back.

It had not been hard labor, but weariness dragged at his mind and he did not relish the household chores yet to be performed, cooking and cleaning and all the rest. Why couldn't they hurry up and get him some helpers?

His eyes sought the sky, resentfully. The moon Five was hidden—

down here, at the bottom of the air ocean, you saw nothing but the sun and the four Galilean satellites. He wasn't even sure where Five was just now, in relation to himself . . . *wait a minute, it's sunset here, but if I went out to the viewdome I'd see Jupiter in the last quarter, or would I, oh, hell, it only takes us half an Earth-day to swing around the planet anyhow—*

Joe shook his head. After all this time, it was still damnably hard, now and then, to keep his thoughts straight. *I, the essential I, am up in heaven, riding Jupiter V between cold stars. Remember that. Open your eyes, if you will, and see the dead control room superimposed on a living hillside.*

He didn't, though. Instead, he regarded the boulders strewn wind-blasted gray over the tough mossy vegetation of the slope. They were not much like Earth rocks, nor was the soil beneath his feet like terrestrial humus.

For a moment Anglesey speculated on the origin of the silicates, aluminates, and other stony compounds. Theoretically, all such materials should be inaccessibly locked in the Jovian core, down where the pressure got vast enough for atoms to buckle and collapse. Above the core should lie thousands of miles of allotropic ice, and then the metallic hydrogen layer. There should not be complex minerals this far up, but there were.

Well, possibly Jupiter had formed according to theory, but had there-

after sucked enough cosmic dust, meteors, gases and vapors, down its great throat of gravitation, to form a crust several miles thick. Or more likely the theory was altogether wrong. What did they know, what could they know, the soft pale worms of Earth?

Anglesey stuck his—Joe's—fingers in his mouth and whistled. A baying sounded in the brush, and two midnight forms leaped toward him. He grinned and stroked their heads; training was progressing faster than he'd hoped, with these pups of the black caterpillar beasts he had taken. They would make guardians for him, herders, servants.

On the crest of the hill, Joe was building himself a home. He had logged off an acre of ground and erected a stockade. Within the grounds there now stood a lean-to for himself and his stores, a methane well, and the beginnings of a large comfortable cabin.

But there was too much work for one being. Even with the half-intelligent caterpillars to help, and with cold storage for meat, most of his time would still go to hunting. The game wouldn't last forever, either; he had to start agriculture within the next year or so—Jupiter year, twelve Earth years, thought Anglesey. There was the cabin to finish and furnish; he wanted to put a waterwheel, no, methane wheel in the river to turn any of a dozen machines he had in mind, he wanted

to experiment with alloyed ice and—

And, quite apart from his need of help, why should he remain alone, the single thinking creature on an entire planet? He was a male in this body, with male instincts—in the long run, his health was bound to suffer if he remained a hermit, and right now the whole project depended on Joe's health.

It wasn't right!

But I am not alone. There are fifty men on the satellite with me. I can talk to any of them, any time I wish. It's only that I seldom wish it, these days. I would rather be Joe.

Nevertheless . . . I, the cripple, feel all the tiredness, anger, hurt, frustration, of that wonderful biological machine called Joe. The others don't understand. When the ammonia gale flays open his skin, it is I who bleed.

Joe lay down on the ground, sighing. Fangs flashed in the mouth of the black beast which humped over to lick his face. His belly growled with hunger, but he was too tired to fix a meal. Once he had the dogs trained—

Another pseudo would be so much more rewarding to educate.

He could almost see it, in the weary darkening of his brain. Down there, in the valley below the hill, fire and thunder as the ship came to rest. And the steel egg would crack open, the steel arms—already crumbling, puny work of worms!—

lift out the shape within and lay it on the earth.

She would stir, shrieking in her first lungful of air, looking about with blank mindless eyes. And Joe would come carry her home. And he would feed her, care for her, show her how to walk—it wouldn't take long, an adult body would learn those things very fast. In a few weeks she would even be talking, be an individual, a soul.

Did you ever think, Edward Anglesey, in the days when you also walked, that your wife would be a gray four-legged monster?

Never mind that. The important thing was to get others of his kind down here, female and male. The station's niggling little plan would have him wait two more Earth-years, and then send him only another dummy like himself, a contemptible human mind looking through eyes which belonged rightfully to a Jovian. It was not to be tolerated!

If he weren't so tired—

Joe sat up. Sleep drained from him as the realization entered. *He* wasn't tired, not to speak of. Anglesey was. Anglesey, the human side of him, who for months had only slept in catnaps, whose rest had lately been interrupted by Cornelius—it was the human body which drooped, gave up, and sent wave after soft wave of sleep down the psibeam to Joe.

Somatic tension traveled skyward; Anglesey jerked awake.

He swore. As he sat there be-

neath the helmet, the vividness of Jupiter faded with his scattering concentration, as if it grew transparent; the steel prison which was his laboratory strengthened behind it. He was losing contact—Rapidly, with the skill of experience, he brought himself back into phase with the neural currents of the other brain. He willed sleepiness on Joe, exactly as a man wills it on himself.

And, like any other insomniac, he failed. The Joe-body was too hungry. It got up and walked across the compound toward its shack.

The K-tube went wild and blew itself out.

The night before the ships left, Viken and Cornelius sat up late.

It was not truly a night, of course. In twelve hours the tiny moon was hurled clear around Jupiter, from darkness back to darkness, and there might well be a pallid little sun over its crags when the clocks said witches were abroad in Greenwich. But most of the personnel were asleep at this hour.

Viken scowled. "I don't like it," he said. "Too sudden a change of plans. Too big a gamble."

"You are only risking—how many?—three male and a dozen female pseudos," Cornelius replied.

"And fifteen J-ships. All we have. If Anglesey's notion doesn't work, it will be months, a year or more, till we can have others built and resume aerial survey."

"But if it does work," said Cor-

nelius, "you won't need any J-ships, except to carry down more pseudos. You will be too busy evaluating data from the surface to piddle around in the upper atmosphere."

"Of course. But we never expected it so soon. We were going to bring more esmen out here, to operate some more pseudos—"

"But they aren't *needed*," said Cornelius. He struck a cigar to life and took a long pull on it, while his mind sought carefully for words. "Not for a while, anyhow. Joe has reached a point where, given help, he can leap several thousand years of history—he may even have a radio of sorts operating in the fairly near future, which would eliminate the necessity of much of your esping. But without help, he'll just have to mark time. And it's stupid to make a highly trained human esman perform manual labor, which is all that the other pseudos are needed for at this moment. Once the Jovian settlement is well established, certainly, then you can send down more puppets."

"The question is, though," persisted Viken, "can Anglesey himself educate all those pseudos at once? They'll be helpless as infants for days. It will be weeks before they really start thinking and acting for themselves. Can Joe take care of them meanwhile?"

"He has food and fuel stored for months ahead," said Cornelius. "As for what Joe's capabilities are, well, hm-m-m . . . we just have to take

Anglesey's judgment. He has the only inside information."

"And once those Jovians do become personalities," worried Viken, "are they necessarily going to string along with Joe? Don't forget, the pseudos are not carbon copies of each other. The uncertainty principle assures each one a unique set of genes. If there is only one human mind on Jupiter, among all those aliens—"

"One *human* mind?" It was barely audible. Viken opened his mouth inquiringly. The other man hurried on.

"Oh, I'm sure Anglesey can continue to dominate them," said Cornelius. "His own personality is rather—tremendous."

Viken looked startled. "You really think so?"

The psionicist nodded. "Yes. I've seen more of him in the past weeks than anyone else. And my profession naturally orients me more toward a man's psychology than his body or his habits. You see a waspish cripple. I see a mind which has reacted to its physical handicaps by developing such a hellish energy, such an inhuman power of concentration, that it almost frightens me. Give that mind a sound body for its use and nothing is impossible to it."

"You may be right, at that," murmured Viken after a pause. "Not that it matters. The decision is taken, the rockets go down tomorrow. I hope it all works out."

He waited for another while.

The whirring of ventilators in his little room seemed unnaturally loud, the colors of a girlie picture on the wall shockingly garish. Then he said, slowly:

"You've been rather close-mouthed yourself, Jan. When do you expect to finish your own esprojector and start making the tests?"

Cornelius looked around. The door stood open to an empty hallway, but he reached out and closed it before he answered with a slight grin: "It's been ready for the past few days. But don't tell anyone."

"How's that?" Viken started. The movement, in low-gee, took him out of his chair and halfway across the table between the men. He shoved himself back and waited.

"I have been making meaningless tinkering motions," said Cornelius, "but what I waited for was a highly emotional moment, a time when I can be sure Anglesey's entire attention will be focused on Joe. This business tomorrow is exactly what I need."

"Why?"

"You see, I have pretty well convinced myself that the trouble in the machine is psychological, not physical. I think that for some reason, buried in his subconscious, Anglesey doesn't want to experience Jupiter. A conflict of that type might well set a psionic amplifier circuit oscillating."

"Hm-m-m." Viken rubbed his chin. "Could be. Lately Ed has been changing more and more. When he first came here, he was peppery

enough, and he would at least play an occasional game of poker. Now he's pulled so far into his shell you can't even see him. I never thought of it before, but . . . yes, by God, Jupiter must be having some effect on him."

"Hm-m-m," nodded Cornelius. He did not elaborate; did not, for instance, mention that one altogether uncharacteristic episode when Anglesey had tried to describe what it was like to be a Jovian.

"Of course," said Viken thoughtfully, "the previous men were not affected especially. Nor was Ed at first, while he was still controlling lower-type pseudos. It's only since Joe went down to the surface that he's become so different."

"Yes, yes," said Cornelius hastily. "I've learned that much. But enough shop talk—"

"No. Wait a minute." Viken spoke in a low, hurried tone, looking past him. "For the first time, I'm starting to think clearly about this . . . never really stopped to analyze it before, just accepted a bad situation. There *is* something peculiar about Joe. It can't very well involve his physical structure, or the environment, because lower forms didn't give this trouble. Could it be the fact that—Joe is the first puppet in all history with a potentially human intelligence?"

"We speculate in a vacuum," said Cornelius. "Tomorrow, maybe, I can tell you. Now I know nothing."

Viken sat up straight. His pale eyes focused on the other man and

stayed there, unblinking. "One minute," he said.

"Yes?" Cornelius shifted, half rising. "Quickly, please. It is past my bedtime."

"You know a good deal more than you've admitted," said Viken. "Don't you?"

"What makes you think that?"

"You aren't the most gifted liar in the universe. And then—you argued very strongly for Anglesey's scheme, this sending down the other pseudos. More strongly than a newcomer should."

"I told you, I want his attention focused elsewhere when—"

"Do you want it that badly?" snapped Viken.

Cornelius was still for a minute. Then he sighed and leaned back.

"All right," he said. "I shall have to trust your discretion. I wasn't sure, you see, how any of you old-time station personnel would react. So I didn't want to blabber out my speculations, which may be wrong. The confirmed facts, yes, I will tell them; but I don't wish to attack a man's religion with a mere theory."

Viken scowled. "What the devil do you mean?"

Cornelius puffed hard on his cigar, its tip waxed and waned like a miniature red demon star. "This Jupiter V is more than a research station," he said gently. "It is a way of life, is it not? No one would come here for even one hitch unless the work was important to him.

Those who re-enlist, they must find something in the work, something which Earth with all her riches cannot offer them. No?"

"Yes," answered Viken. It was almost a whisper. "I didn't think you would understand so well. But what of it?"

"Well, I don't want to tell you, unless I can prove it, that maybe this has all gone for nothing. Maybe you have wasted your lives and a lot of money, and will have to pack up and go home."

Viken's long face did not flicker a muscle. It seemed to have congealed. But he said calmly enough: "Why?"

"Consider Joe," said Cornelius. "His brain has as much capacity as any adult human's. It has been recording every sense datum that came to it, from the moment of 'birth'—making a record in itself, in its own cells, not merely in Anglesey's physical memory bank up here. Also, you know, a thought is a sense datum too. And thoughts are not separated into neat little railway tracks; they form a continuous field. Every time Anglesey is in rapport with Joe, and thinks, the thought goes through Joe's synapses as well as his own—and every thought carries its own associations, and every associated memory is recorded. Like if Joe is building a hut, the shape of the logs might remind Anglesey of some geometric figure, which in turn would remind him of the Pythagorean theorem—"

"I get the idea," said Viken in a

cautious way. "Given time, Joe's brain will have stored everything that ever was in Ed's."

"Correct. Now a functioning nervous system with an engrammatic pattern of experience—in this case, a *nonhuman* nervous system—isn't that a pretty good definition of a personality?"

"I suppose so—Good Lord!" Viken jumped. "You mean Joe is—taking over?"

"In a way. A subtle, automatic, unconscious way." Cornelius drew a deep breath and plunged into it. "The pseudojovian is so nearly perfect a life form: your biologists engineered into it all the experience gained from nature's mistakes in designing *us*. At first, Joe was only a remote-controlled biological machine. Then Anglesey and Joe became two facets of a single personality. Then, oh, very slowly, the stronger, healthier body . . . more amplitude to its thoughts . . . do you see? Joe is becoming the dominant side. Like this business of sending down the other pseudos—Anglesey only thinks he has logical reasons for wanting it done. Actually, his 'reasons' are mere rationalizations for the instinctive desires of the Joe-facet.

"Anglesey's subconscious must comprehend the situation, in a dim reactive way; it must feel his human ego gradually being submerged by the steamroller force of *Joe's* instincts and *Joe's* wishes. It tries to defend its own identity, and is swat-

ted down by the superior force of Joe's own nascent subconscious.

"I put it crudely," he finished in an apologetic tone, "but it will account for that oscillation in the K-tubes."

Viken nodded, slowly, like an old man. "Yes, I see it," he answered. "The alien environment down there . . . the different brain structure . . . good God! Ed's being swallowed up in Joe! The puppet master is becoming the puppet!" He looked ill.

"Only speculation on my part," said Cornelius. All at once, he felt very tired. It was not pleasant to do this to Viken, whom he liked. "But you see the dilemma, no? If I am right, then any esman will gradually become a Jovian—a monster with two bodies, of which the human body is the unimportant auxiliary one. This means no esman will ever agree to control a pseudo—therefore, the end of your project."

He stood up. "I'm sorry, Arne. You made me tell you what I think, and now you will lie awake worrying, and I am maybe quite wrong and you worry for nothing."

"It's all right," mumbled Viken. "Maybe you're not wrong."

"I don't know." Cornelius drifted toward the door. "I am going to try to find some answers tomorrow. Good night."

The moon-shaking thunder of the rockets, crash, crash, crash, leaping from their cradles, was long past. Now the fleet glided on metal wings, with straining secondary ramjets,

through the rage of the Jovian sky.

As Cornelius opened the control-room door, he looked at his telltale board. Elsewhere a voice tolled the word to all the stations, *one ship wrecked, two ships wrecked*, but Anglesey would let no sound enter his presence when he wore the helmet. An obliging technician had haywired a panel of fifteen red and fifteen blue lights above Cornelius' esprojector, to keep him informed, too. Ostensibly, of course, they were only there for Anglesey's benefit, though the esman had insisted he wouldn't be looking at them.

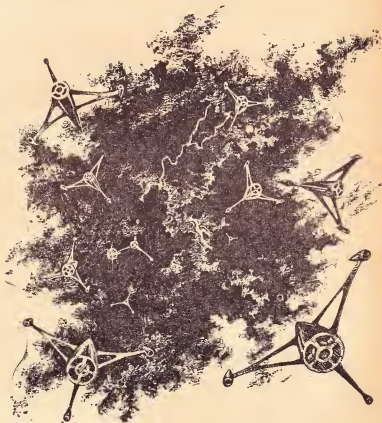
Four of the red bulbs were dark and thus four blue ones would not shine for a safe landing. A whirlwind, a thunderbolt, a floating ice meteor, a flock of mantalike birds with flesh as dense and hard as iron—there could be a hundred things which had crumpled four ships and tossed them tattered across the poison forests.

Four ships, hell! Think of four living creatures, with an excellence of brain to rival your own, damned first to years in unconscious night and then, never awakening save for one uncomprehending instant, dashed in bloody splinters against an ice mountain. The wasteful callousness of it was a cold knot in Cornelius' belly. It had to be done, no doubt, if there was to be any thinking life on Jupiter at all; but then let it be done quickly and minimally, he thought, so the next generation could be begotten by love and not by machines!

He closed the door behind him and waited for a breathless moment. Anglesey was a wheelchair and a coppery curve of helmet, facing the opposite wall. No movement, no awareness whatsoever. Good!

It would be awkward, perhaps ruinous, if Anglesey learned of this most intimate peering. But he needn't, ever. He was blindfolded and ear-plugged by his own concentration.

Nevertheless, the psionicist moved his bulky form with care, across the room to the new esprojector. He did not much like his snooper's role, he would not have assumed it at all if he had seen any other hope. But neither did it make him feel especially guilty. If what he suspected was true, then Anglesey was all un-awares being twisted into something not human; to spy on him might be to save him.



Gently, Cornelius activated the meters and started his tubes warming up. The oscilloscope built into Anglesey's machine gave him the other man's exact alpha rhythm, his basic biological clock. First you adjusted to that, then you discovered the subtler elements by feel, and when your set was fully in phase you could probe undetected and—

Find out what was wrong. Read Anglesey's tortured subconscious and see what there was on Jupiter that both drew and terrified him.

Five ships wrecked.

But it must be very nearly time for them to land. Maybe only five would be lost in all. Maybe ten would get through. Ten comrades for—Joe?

Cornelius sighed. He looked at the cripple, seated blind and deaf to the human world which had crippled him, and felt a pity and an anger. It wasn't fair, none of it was.

Not even to Joe. Joe wasn't any kind of soul-eating devil. He did not even realize, as yet, that he *was* Joe, that Anglesey was becoming a mere appendage. He hadn't asked to be created, and to withdraw his human counterpart from him would very likely be to destroy him.

Somehow, there were always penalties for everybody, when men exceeded the decent limits.

Cornelius swore at himself, voicelessly. Work to do. He sat down and fitted the helmet on his own head. The carrier wave made a faint pulse, inaudible, the trembling of

neurones low in his awareness. You couldn't describe it.

Reaching up, he tuned to Anglesey's alpha. His own had a somewhat lower frequency, it was necessary to carry the signals through a heterodyning process. Still no reception . . . well, of course he had to find the exact wave form, timbre was as basic to thought as to music. He adjusted the dials, slowly, with enormous care.

Something flashed through his consciousness, a vision of clouds roiled in a violet-red sky, a wind that galloped across horizonless immensity—he lost it. His fingers shook as he tuned back.

The psibeam between Joe and Anglesey broadened. It took Cornelius into the circuit. He looked through Joe's eyes, he stood on a hill and stared into the sky above the ice mountains, straining for sign of the first rocket; and simultaneously, he was still Jan Cornelius, blurrily seeing the meters, probing about for emotions, symbols, any key to the locked terror in Anglesey's soul.

The terror rose up and struck him in the face.

Psionic detection is not a matter of passive listening in. Much as a radio receiver is necessarily also a weak transmitter, the nervous system in resonance with a source of psionic-spectrum energy is itself emitting. Normally, of course, this effect is unimportant; but when you pass the impulses, either way,

through a set of heterodyning and amplifying units, with a high negative feedback—

In the early days, psionic psychotherapy vitiated itself because the amplified thoughts of one man, entering the brain of another, would combine with the latter's own neural cycles according to the ordinary vector laws. The result was that both men felt the new beat frequencies as a nightmarish fluttering of their very thoughts. An analyst, trained into self-control, could ignore it; his patient could not, and reacted violently.

But eventually the basic human wave-timbres were measured, and psionic therapy resumed. The modern esprojector analyzed an incoming signal and shifted its characteristics over to the "listener's" pattern. The *really* different pulses of the transmitting brain, those which could not possibly be mapped onto the pattern of the receiving neurones—as an exponential signal cannot very practicably be mapped onto a sinusoid—those were filtered out.

Thus compensated, the other thought could be apprehended as comfortably as one's own. If the patient were on a psibeam circuit, a skilled operator could tune in without the patient being necessarily aware of it. The operator could either probe the other man's thoughts or implant thoughts of his own.

Cornelius' plan, an obvious one to any psionicist, had depended on this. He would receive from an un-

witting Anglesey-Joe. If his theory were right, and the esman's personality was being distorted into that of a monster—his thinking would be too alien to come through the filters. Cornelius would receive spottily or not at all. If his theory was wrong, and Anglesey was still Anglesey, he would receive only a normal human stream-of-consciousness, and could probe for other trouble-making factors.

His brain roared!

What's happening to me?

For a moment, the interference which turned his thoughts to saw-toothed gibberish struck him down with panic. He gulped for breath, there in the Jovian wind, and his dreadful dogs sensed the alienness in him and whined.

Then, recognition, remembrance, and a blaze of anger so great that it left no room for fear. Joe filled his lungs and shouted it aloud, the hillside boomed with echoes:

"Get out of my mind!"

He felt Cornelius spiral down toward unconsciousness. The overwhelming force of his own mental blow had been too much. He laughed, it was more like a snarl, and eased the pressure.

Above him, between thunderous clouds, winked the first thin descending rocket flare.

Cornelius' mind groped back toward the light. It broke a watery surface, the man's mouth snapped after air and his hands reached for

the dials, to turn his machine off and escape.

"Not so fast, you." Grimly, Joe drove home a command that locked Cornelius' muscles rigid. "I want to know the meaning of this. Hold still and let me look!" He smashed home an impulse which could be rendered, perhaps, as an incandescent question mark. Remembrance exploded in shards through the psionist's forebrain.

"So. That's all there is? You thought I was afraid to come down here and be Joe, and wanted to know why? But I *told* you I wasn't!"

I should have believed—whispered Cornelius.

"Well, get out of the circuit, then." Joe continued growling it vocally. "And don't ever come back in the control room, understand? K-tubes or no, I don't want to see you again. And I may be a cripple, but I can still take you apart cell by cell. Now—sign off—leave me alone. The first ship will be landing in minutes."

You a cripple . . . you, Joe Anglesey?

"What?" The great gray being on the hill lifted his barbaric head as if to sudden trumpets. "What do you mean?"

Don't you understand? said the weak, dragging thought. *You know how the esprojector works. You know I could have probed Anglesey's mind in Anglesey's brain without making enough interference to be noticed. And I could not have probed a wholly nonhuman mind at*

all, nor could it have been aware of me. The filters would not have passed such a signal. Yet you felt me in the first fractional second. It can only mean a human mind in a nonhuman brain.

You are not the half-corpses on Jupiter V any longer. You're Joe—Joe Anglesey.

"Well, I'll be damned," said Joe. "You're right."

He turned Anglesey off, kicked Cornelius out of his mind with a single brutal impulse, and ran down the hill to meet the spaceship.

Cornelius woke up minutes afterward. His skull felt ready to split apart. He groped for the main switch before him, clashed it down, ripped the helmet off his head and threw it clanging on the floor. But it took a little while to gather the strength to do the same for Anglesey. The other man was not able to do anything for himself.

They sat outside sickbay and waited. It was a harshly lit barrenness of metal and plastic, smelling of antiseptics: down near the heart of the satellite, with miles of rock to hide the terrible face of Jupiter.

Only Viken and Cornelius were in that cramped little room. The rest of the station went about its business mechanically, filling in the time till it could learn what had happened. Beyond the door, three biotechnicians, who were also the station's medical staff, fought with death's angel for the thing which had been Edward Anglesey.

"Nine ships got down," said Viken dully. "Two males, seven females. It's enough to start a colony."

"It would be genetically desirable to have more," pointed out Cornelius. He kept his own voice low, in spite of its underlying cheerfulness. There was a certain awesome quality to all this.

"I still don't understand," said Viken.

"Oh, it's clear enough—now. I should have guessed it before, maybe. We had all the facts, it was only that we couldn't make the simple, obvious interpretation of them. No, we had to conjure up Frankenstein's monster."

"Well," Viken's words grated, "we have played Frankenstein, haven't we? Ed is dying in there."

"It depends on how you define death." Cornelius drew hard on his cigar, needing anything that might steady him. His tone grew purposely dry of emotion:

"Look here. Consider the data. Joe, now: a creature with a brain of human capacity, but without a mind—a perfect Lockean *tabula rasa*, for Anglesey's psibeam to write on. We deduced, correctly enough—if very belatedly—that when enough had been written, there would be a personality. But the question was: whose? Because, I suppose, of normal human fear of the unknown, we assumed that any personality in so alien a body had to be monstrous. Therefore it must be hostile to

Anglesey, must be swamping him—"

The door opened. Both men jerked to their feet.

The chief surgeon shook his head. "No use. Typical deep-shock traumata, close to terminus now. If we had better facilities, maybe—"

"No," said Cornelius. "You cannot save a man who has decided not to live any more."

"I know." The doctor removed his mask. "I need a cigarette. Who's got one?" His hands shook a little as he accepted it from Viken.

"But how could he—decide—anything?" choked the physicist. "He's been unconscious ever since Jan pulled him away from that . . . that thing."

"It was decided before then," said Cornelius. "As a matter of fact, that hulk in there on the operating table no longer has a mind. I know. I was there." He shuddered a little. A stiff shot of tranquilizer was all that held nightmare away from him. Later he would have to have that memory exorcised.

The doctor took a long drag of smoke, held it in his lungs a moment, and exhaled gustily. "I guess this winds up the project," he said. "We'll never get another esman."

"I'll say we won't." Viken's tone sounded rusty. "I'm going to smash that devil's engine myself."

"Hold on a minute!" exclaimed Cornelius. "Don't you understand? This isn't the end. It's the beginning!"

"I'd better get back," said the doctor. He stubbed out his cigarette and went through the door. It closed behind him with a deathlike quietness.

"What do you mean?" Viken said it as if erecting a barrier.

"*Won't* you understand?" roared Cornelius. "Joe has all Anglesey's habits, thoughts, memories, prejudices, interests . . . oh, yes, the different body and the different environment, they do cause some changes—but no more than any man might undergo on Earth. If you were suddenly cured of a wasting disease, wouldn't you maybe get a little boisterous and rough? There is nothing abnormal in it. Nor is it abnormal to want to stay healthy—no? Do you see?"

Viken sat down. He spent a while without speaking.

Then, enormously slow and careful: "Do you mean Joe is Ed?"

"Or Ed is Joe. Whatever you like. He calls himself Joe now, I think—as a symbol of freedom—but he is still himself. What *is* the ego but continuity of existence?"

"He himself did not fully understand this. He only knew—he told me, and I should have believed him—that on Jupiter he was strong and happy. Why did the K-tube oscillate? A hysterical symptom! Anglesey's subconscious was not afraid to stay on Jupiter—it was afraid to come back!"

"And then, today, I listened in. By now, his whole self was focused

on Joe. That is, the primary source of libido was Joe's virile body, not Anglesey's sick one. This meant a different pattern of impulses—not too alien to pass the filters, but alien enough to set up interference. So he felt my presence. And he saw the truth, just as I did—

"Do you know the last emotion I felt, as Joe threw me out of his mind? Not anger any more. He plays rough, him, but all he had room to feel was joy.

"I *knew* how strong a personality Anglesey has! Whatever made me think an overgrown child-brain like Joe's could override it? In there, the doctors—bah! They're trying to salvage a hulk which has been shed because it is useless!"

Cornelius stopped. His throat was quite raw from talking. He paced the floor, rolled cigar smoke around his mouth but did not draw it any farther in.

When a few minutes had passed, Viken said cautiously: "All right. You should know—as you said, you were there. But what do we do now? How do we get in touch with Ed? Will he even be interested in contacting us?"

"Oh, yes, of course," said Cornelius. "He is still himself, remember. Now that he has none of the cripple's frustrations, he should be more amiable. When the novelty of his new friends wears off, he will want someone who can talk to him as an equal."

"And precisely who will operate another pseudo?" asked Viken sar-

castically. "I'm quite happy with this skinny frame of mine, thank you!"

"Was Anglesey the only hopeless cripple on Earth?" asked Cornelius quietly.

Viken gaped at him.

"And there are aging men, too," went on the psionist, half to himself. "Someday, my friend, when you and I feel the years close in, and so much we would like to learn—maybe we, too, would enjoy an extra lifetime in a Jovian body." He nodded at his cigar. "A hard, lusty, stormy kind of life, granted—dangerous, brawling, violent—but life as no human, perhaps, has lived it

since the days of Elizabeth the First. Oh, yes, there will be small trouble finding Jovians."

He turned his head as the surgeon came out again.

"Well?" croaked Viken.

The doctor sat down. "It's finished," he said.

They waited for a moment, awkwardly.

"Odd," said the doctor. He groped after a cigarette he didn't have. Silently, Viken offered him one. "Odd. I've seen these cases before. People who simply resign from life. This is the first one I ever saw that went out smiling—smiling all the time."

THE END

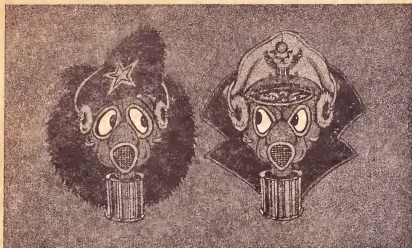
IN TIMES TO COME

Ed Emsh came into the office a while back with an idea for a symbolic cover. Nice idea it was, too. Randall Garrett was around discussing something at the time and made some suggestions. . . .

The result is that I can't call "What's Eating *You*?" a story by Randall Garrett, illustrated with Ed Emsh's cover, nor say Randall Garrett wrote a story around Emsh's symbolic cover. But that there's a story by Garrett and Emsh with a cover by Emsh and Garrett, maybe.

When you see the cover on the stands next month, you'll see immediately how Emsh's idea could lead to an artist-author collaboration.

THE EDITOR.



TORCH

The old saying hath it that "Where there's smoke, there's fire." 'Tain't necessarily true. Matter of fact, enough smoke might make the need of fire almost desperate....

BY CHRISTOPHER ANVIL

Illustrated by Freas

Moscow, April 28th—Official sources here have revealed that the firing of a huge intercontinental ballistic missile is scheduled for the annual Soviet May Day celebration.

New York, May 1st—Seismologists report violent tremors occurring

shortly after 8:00 a.m. G.M.T. this morning.

Washington, May 1st—The Soviet May Day missile is suspected here to have been the first of the new "groundhog" type, capable of penetrating underground shelters. But no one here will comment on certain

rumored "strange characteristics" of the blast.

New York, May 2nd—Seismologists report repeated tremors, apparently from the site of the blast of May 1st. One noted seismologist states that this is "most unusual if the result of a bomb explosion."

Moscow, May 2nd—There is still no word here on the May Day blast. All questions are answered, "No comment."

New York, May 3rd—Seismologists report tremors of extraordinary violence, occurring shortly after 1:00 a.m., 1:35 a.m., and 1:55 a.m., G.M.T. this morning.

Washington, May 3rd—The Atomic Energy Commission this morning assured reporters there is no danger of the world "taking fire" from recent Soviet blasts.

Chicago, May 3rd—The world may already be on fire. That is the opinion of an atomic scientist reached here late this evening—"if the initial blast took place in the presence of sufficient deposits of light or very heavy metals."

Los Angeles, May 3rd—The world will end by fire on May 7th, predicts the leader of a religious sect here. The end will come "by the spreading of fiery fingers, traveling at the speed of light from the wound in the flesh of the Earth."

Tokyo, May 4th—A radioactive drizzle came down on the west coast of Honshu, the main Japanese island, last night. Teams of scientists are being rushed to the area.

New York, May 4th—Stocks fell sharply here this morning.

Paris, May 4th—A correspondent recently arrived here from the Soviet Union reports that rumors are rife in Moscow of tremendous flames raging out of control in Soviet Siberia. According to these reports the hospitals are flooded with burned workers, and citizens east of the Urals are being recruited by the tens of thousands to form "flame legions" to fight the disaster.

London, May 5th—The British Government today offered "all possible assistance" to Moscow, in the event reports of a great atomic disaster are true.

New York, May 5th—Seismologists report repeated tremors, from the site of the shocks of May 1st and 3rd.

Tokyo, May 6th—A heavy deposit of slightly radioactive soot fell on Honshu and Hokkaido last night.

Moscow, May 6th—There is no comment yet on the May Bomb or on British, French and Italian offers of aid.

New York, May 7th—Seismologists

here report tremors of extraordinary violence, occurring shortly after 8:00 p.m. G.M.T. last night.

Washington, May 7th—A special Senate committee, formed to consider the atomic danger in the U.S.S.R. announced this morning that it favors "all reasonable aid to the Russians." The committee chairman stated to reporters, "It's all one world. If it blows up on them, it blows up on us, too."

Washington, May 7th—The Atomic Energy Commission repeated its claim that the earth could not have caught fire from the recent Russian explosions.

Tokyo, May 8th—Japanese fishermen to the northeast of Hokkaido report the waters in large areas black with a layer of radioactive soot.

New York, May 8th—Seismologists report repeated tremors from the region of the severe shocks of May 1st, 3rd, and 7th.

Washington, May 9th—The United States has offered special assistance to Soviet Russia, but the latest word here is that no reply has been received.

Washington, May 9th—Responsible officials here indicate that if no word is received from Moscow within eighteen hours, and if these shocks continue, a special mission

will be sent to Russia by the fastest military transportation available. "We are not," said one official, "going to stand around with our hands in our mouths while the world disintegrates under our feet."

Seoul, May 9th—It is reported here that the radioactive soot that plastered Japan and adjacent areas has fallen even more heavily in North Korea. The Communist Government is reportedly trying to pass the soot off as the work of "Capitalist spies and saboteurs."

Washington, May 9th—The United States government has reiterated its offer to the Soviet Union of "prompt and sympathetic consideration" of any requests for aid.

New York, May 10th—Seismologists here report repeated tremors from the region of the earlier shocks.

Moscow, May 10th—It has been impossible to reach any responsible official here for comment on Western offers of assistance.

London, May 10th—The British Government today urgently recommended that the Soviet Union seriously consider Western offers of assistance.

Washington, May 10th—No word having been received here from Moscow, an experimental Hellblast bomber sprang from her launching

rack bearing a nine-man mission to Moscow. Word of the mission's departure is being sent the Russians by all channels of communication. But it is said here that if no permission to land is given, the Hellblast will attempt to smash through to Moscow anyway.

Tokyo, May 10th—Another load of soot has been dumped on Japan today. This batch is only slightly radioactive, but scientists are not happy because they do not know what to make of it.

Seoul, May 10th—Riots are reported in Communist North Korea as the "black death" continues to rain down from the skies. It is not known whether the soot has caused actual death or merely panic.

St. Paul, Minn., May 10th—A light powdering of black flecks has been reported in snow that has fallen near here in the last twenty-four hours.

Moscow, May 11th—A United States Hellblast bomber roared out of the dawn here today bearing a nine-man mission. The mission was greeted at the airfield by a small group of worn and tired Russian officials.

Minneapolis, May 11th—Scientists report only a trace of radioactivity in the "tainted snow" that fell near here yesterday. The scientists reit-

erate that the radioactivity is not present in dangerous amounts.

Tokyo, May 11th—Considerable deposits of radioactive soot and ash landed on Japan yesterday and last night. Japanese scientists have issued warnings to all persons in the affected areas. The Japanese Government has delivered a severe protest to the Soviet embassy.

Hong Kong, May 11th—Reports here indicate the Chinese Communist Government is making representations to Moscow about the soot-fall following the Russian May Day blast. According to these reports, the North Korean Government is being overwhelmed with the people's angry demands that the Russians cease "dumping their waste on their allies."

New York, May 12th—The American mission that arrived here yesterday has disappeared into the Kremlin and has not been seen or heard from since.

Washington, May 12th—The United States Government reports that it is now in close contact with the Soviet Government on the situation in Siberia.

Seoul, May 13th—It is reported here that the government of Communist North Korea has issued a twelve-hour ultimatum to the Soviet Union. If the dumping of fission products continues beyond that time,

ASTOUNDING SCIENCE FICTION

North Korea threatens to break off relations and take "whatever other measures prove to be necessary."

Paris, May 13th—Repeated efforts by the French Government have failed to produce any response from Moscow. French atom scientists have offered to travel to the Soviet Union in a body if their services can be of any use.

Washington, May 14th—A Soviet request for American aid was received here early this morning. Reportedly, the Russians asked for ten thousand of the largest available bulldozers or other earth-moving vehicles, equipped with special high-efficiency filters for the air-intake mechanisms.

London, May 14th—The British Government reports receiving a request for large numbers of specially-equipped earth-moving vehicles. Red tape is being cut as fast as possible, and the first consignment is expected to leave tomorrow. However, there is still no explanation of what is going on in the Soviet Union.

Washington, May 14th—A special meeting of the Senate committee investigating the May Bomb is scheduled for tomorrow, when the American mission is expected to return.

New York, May 15th—Repeated tremors are reported here from the region of the severe shocks of May 1st, 3rd, and 7th.

Washington, May 15th—The Senate Committee on the May Bomb met today, and questioned members of the American mission that had just returned:

Senator Keeler: Gentlemen, what's going on over there?

Mr. Brainerd: They're in a mess, Senator. And so are we.

Senator Keeler: Could you be more specific? Is the . . . is the earth on fire?

Mr. Brainerd: No. It's not that, at least.

Senator Keeler: Then there's no danger—

Mr. Brainerd: The earth won't burn up under us, no. This thing was set off atomically, but it goes on by itself.

Senator Keeler: What happened?

Mr. Brainerd: They tried out their groundhog missile on May Day. They had a giant underground shelter built, and they wanted to show what the groundhog would do to it. The idea was to show there was no use anyone building shelters, because the Russian groundhog could dig right down to them.

Senator Keeler: Did it?

Mr. Brainerd: It did. It blew up in the shelter and heated it white hot.

Senator Keeler: I see. But why should that cause trouble?

Mr. Brainerd: Because, unknown to them or anyone else, Senator, there were deep deposits of oil underground, beneath the shel-

ter. The explosion cracked the surrounding rock. The oil burst up through the cracks, shot out into the white-hot remains of the underground chambers, and vaporized. At least that's the explanation the Russians and Dr. Dentner here have for what happened. All anybody can see is a tremendous black column rising up.

Senator Keeler: Do you have anything to add to that, Dr. Dentner?

Dr. Dentner: No, that about covers it.

Senator Keeler: Well, then, do any of my colleagues have any questions? Senator Daley?

Senator Daley: Yes, I've got some questions. Dr. Dentner, what's that black stuff made of?

Dr. Dentner: Quite a number of compounds: carbon monoxide; carbon dioxide; water vapor; saturated and unsaturated gaseous hydrocarbons; the vapors of saturated and unsaturated non-gaseous hydrocarbons. But the chief constituent seems to be finely-divided carbon—in other words, soot.

Senator Daley: The world isn't on fire?

Dr. Dentner: No.

Senator Daley: The oil fire can't spread to here?

Dr. Dentner: No. Not by any process I can imagine.

Senator Daley: All right, then, I've got a crude idea. Why not let them stew in their own juice?

They started this. They were going to scare the world with it. O.K., let *them* worry about it. It'll give them something to do. Keep them out of everybody's hair for a while.

Senator Keeler: The idea has its attractions, at that. What about it, Doctor?

Dr. Dentner: The fire won't spread to here, but— Well, General Maxwell has already considered the idea and given it up.

Senator Daley: Why's that?

General Maxwell: Set up an oil furnace in the cloakroom and run the flue in here through that wall over there. Then light the furnace. That's why.

Senator Daley: The stuff's going to come down on us?

Dr. Dentner: It seems probable. There have already been several light falls in the midwest.

Senator Daley: I thought it was too good to work. O.K. then, we've got to put it out. How?

Dr. Dentner: They've already made attempts to blow it out with H-bombs. But the temperature in the underground chambers is apparently so high that the fire reignites. The present plan is to push a mass of earth in on top of it and choke out the flame.

Senator Daley: Don't they have enough bulldozers? I mean, if it's that simple, why don't they have it out?

Dr. Dentner: It's on a large

scale, and that produces complications.

General Maxwell: For instance: the air is full of soot. The soot gets in the engines. Men choke on it.

Mr. Brainerd: The general effect is like trying to do a day's work inside a chimney.

General Maxwell: And the damned thing sits across their lines of communications, dumping heaps of soot on the roads and railroad tracks, and strangling anyone that tries to get past. The trains spin their wheels, and that's the end of that. It's a question of going way around to the north or way around to the south. There's a severe cold wave in the north, so that's out. They're laying track to the south at a terrific pace, but there's a long way to go. What it amounts to is, they're cut in half.

Senator Daley: It seems to me we ought to be able to make a buck out of this.

Mr. Brainerd: It's a temptation; but I hate to kick a man when he's down.

Senator Daley: ARE they down?

Mr. Brainerd: Yes, they're down. The thing is banging their head on the floor. They're still fighting it, but it's like fighting a boa constrictor. Where do you take hold to hurt it?

Senator Daley: Just back of the head.

Mr. Brainerd: That's the part

they can't get at. Meanwhile, it crushes the life out of them.

General Maxwell: The idea is, to fight the main enemy. If they don't beat it, we'll have to. And it will be a lot harder for us to get at it than it is for them. The idea is, to pour the supplies to them while they're still alive to use them. Otherwise, that volcano keeps pumping soot into the air and we get it in the neck, too.

Dr. Dentner: There's one more point here.

Senator Daley: What's that?

Dr. Dentner: Neither their scientists nor I could understand why a stray spark hasn't ignited the soot. It must be an explosive mixture.

General Maxwell: If that happens, it will make World War II look like a garden party.

Mr. Brainerd: Like a grain-elevator explosion a thousand miles across.

Senator Daley: Well— All right, that does it. What do they need?

Mr. Brainerd: We've got a list here as long as your arm for a starter.

Senator Daley: Then let's get started.

Senator Keeler: Let's see the list. And I'm not sure the rest of this shouldn't be secret for the time being.

Senator Daley: Right. Let's see what they want first.

New York, June 8th—The first ten shiploads of gangtracks, bores,

sappers, and hogger mauls raced out of New York harbor today on converted liners, bound for Murmansk. A similar tonnage is reported leaving San Francisco for Vladivostok tonight.

Tokyo, June 14th—The evacuation of another one hundred square miles of Honshu Island was completed early today.

Hong Kong, June 27th—Reports reaching here from Red China indicate that the Chinese Communist Government is moving its capital south from Peiping to Nanking. Relations between Red China and the Soviet Union are reported extremely bad.

New York, June 28th—According to the U. N. Disaster Committee meeting here this morning, over three billion dollars worth of supplies has thus far been poured into the U.S.S.R. in Operation Torch.

Tokyo, July 2nd—The Smog Belt is reported extending itself southward. Officials here fear that this, combined with the unseasonable cold, will swell the mounting casualty list still further.

Seoul, July 9th—Severe fighting is reported between the North Korean People's Army and Russian troops defending the border region south of Vladivostok.

New York, July 18th—Three spe-

cially-built high-speed dual-hull transports left here this morning bearing three Super-Hoggers of the Mountain-Mover class.

London, July 23rd—The furnaces of Britain's yards and factories are blazing as they have not in three generations, to finish the last four sections of the huge Manchester Snake, which will be shipped in sections to France and assembled for its overland trip to the Soviet Union. Work has been aided somewhat here by the unusually cool summer weather.

Skagway, Alaska, August 2nd—The Pittsburgh Mammoth rolled north past here at 2:00 a.m. this morning.

Nome, August 5th—The Bering Bridge is almost complete.

Moscow, August 6th—The 20th, 21st, and 40th Divisions of the Soviet 2nd Red Banner Flame Army marched in review through Red Square today before entraining for the East.

Nome, August 8th—The Pittsburgh Mammoth crushed past here at dawn this morning. Crowds from up and down the coast, their faces hidden behind gas masks and soot shields, were on hand to see the Mammoth roll north toward the Bering Bridge. Tank trucks in relays refueled the giant.

ASTOUNDING SCIENCE FICTION

Headquarters, Supreme High Command of the Soviet Red Banner Flame Legions, September 21st—Final Communique: The campaign against the enemy has ended in victory. Nothing remains to mark the site save a towering monument to the bravery of the Soviet citizen, to the supreme organization of the war effort by the high officials of the Soviet Government, and to the magnificent output of Soviet industry. Help also was received from countries desiring to participate in the great Soviet effort, which has resulted in this great victory. Work now must be begun with unhesitating energy to return the many brave workers to their peacetime stations.

London, September 22nd—The consensus here seems to be that naturally we cannot expect credit, but it is at least a relief to know the thing is over.

Washington, September 22nd—After talking with a number of high officials here, the general feeling seems to be: After this, we are to go back to the Cold War?

Moscow, December 3rd—Winter here seems to be taking hold with a vengeance. Temperatures of a hundred degrees below zero are being reported from many regions that normally do not record even remotely comparable readings till the middle of January. It looks by far the severest winter on record. Com-

ing after all the trouble this spring and summer, this is a heavy blow.

Ottawa, Canada, December 8th—The cold here in Canada is unusually severe for this time of year.

Washington, December 10th—The Senate Committee on the Russian May Bomb explosion reconvened briefly to hear expert testimony today. Bundled in heavy overcoats, the senators listened to testimony that may be summed up briefly in this comment by a meteorologist:

"No, Senator, we don't know when these fine particles will settle. The heavier particles of relatively large diameter settle out unless the air currents sweep them back up again, and then we have these 'soot showers.' But the smaller particles remain aloft and screen out part of the sun's radiation. Presumably they'll settle eventually; but in the meantime it's a good deal as if we'd moved the Arctic Circle down to about the fifty-fifth degree of latitude."

When asked what might be done about this immediately, the experts suggested government aid to supply fuel to people in the coldest locations, and it was urged that fuel stockpiles be built up now, as unexpected transportation difficulties may arise in the depths of winter.

Underground Moscow, December 17th—The Soviet Government is reported making tremendous efforts to house millions of its people un-

derground. Much of the equipment used in fighting the Torch is fitted for this work, but deep snow and the severe cold have hamstrung the transportation system.

New York, January 15th—National Headquarters of the Adopt-A-Russian Drive has announced that their drive "went over the top at 7:00 tonight, just five hours before deadline."

Prince Rupert, Canada, January 22nd—Three polar bears were reported seen near here last Friday.

Washington, February 3rd—Scientists concluded today that things will get worse before they get better.

Settling of the particles is slow, they say, and meanwhile the oceans—"the great regulator"—will become colder.

New York, March 10th—Heavily dressed delegates of the former "Communist" and "Capitalist" blocs met here today to solemnly commemorate the ending of the so-called "cold war"—the former ideological phrase—in the strength of unity. The delegates agreed unanimously on many measures, one of them the solemn pledge to "Remain united as one people under God, and to persevere in our efforts together till and even beyond the time when the *Cold War* shall end."

THE END

THE ANALYTICAL LABORATORY

With two months to report on my comments shall be brief. I'd like to report to you, sir reader, that the authors you voted into first place have you to thank for an extra cent a word bonus, and the second-place winners thank you for that half-cent bonus. Your letters are of most immediate interest and effect to me and to the authors, even if we can't always write personal replies.

DECEMBER 1956 ISSUE

PLACE	STORY	AUTHOR	POINTS
1.	The Naked Sun (Conclusion)	Isaac Asimov	1.33
2.	False Prophet	Robert Randall	2.06
3.	2966: Election Day	Michael Shaara	2.93
4.	Look On My Works	Algis Budrys	3.33

There were only four stories in the December issue and Isaac was stealing the show anyway. His article "Names! Names! Names!" was also in there!

(Continued on page 149)



CHAIN REACTION

*Any man will struggle for the right to freedom
—to live by his own beliefs. Even—or perhaps,
particularly!—if it is a stupid belief that kills him!*

BY JOHN A. SENTRY

Illustrated by Freas

Dahano the village Headman squatted in the doorway of his hut, facing the early sun with his old face wrinkled in thought. Last night he'd seen omens in the sky.

For good or for bad? Dahano considered both sides of the question. Two days ago, the Masters had made an example of Borthen, his son. They'd ordered him to die, and when he'd died they hung his body on a frame in the slave village square. Dahano'd cut him down last night.

He cremated him in the hollow where generation after generation of villagers had burned. There, on the ashen ground, Dahano'd traced out the old burning-ritual signs and sung the chant. The dirge had been taught to him by his father, from his grandfather and his greatgrandfather. It had been remembered faithfully from the old, great days when men had lived as they ought to live. Harsh, constricted in Dahano's dried old throat, the chant had keened up to the sky:

Here is a dead person. Take him, Heaven People—give him food and drink; shelter him. Let him live among you and be one of you forever; let him be happy, let him rest at the end of his day's labor, let him dwell in his own house, and let him have broad fields for his own. Let his well give sweet water, and let his cattle be fat. Let him eat of the best, and have of the best, and give him the best of your women to wife.

Here is a dead person. Let him live with you.

Then Dahano'd told the Heaven People how Borthen had come to die before his time. In the days when people lived as they ought to, the reason might have been any one of many: a weak soul, bad luck that brought him to drown in a creek or be killed by a wild beast, or death in war. But since a time gone so long ago that it came before Dahano's grandfather, there'd been only one such reason to give the Heaven People:

He was killed for breaking the Masters' law.

Which is not the proper law for people, Dahano'd added in bitterness and in the slow, nourished anger his father'd taught him along with the stories of the times before the Masters.

Take him, Heaven People. Take him, shelter him, for I can do no more for him. Let him live among you forever, for he can no longer live here in the village with me. Take Borthen up among you—take my only son.

In bitterness, in fresh anger and in old, the chant had gone up. It made no difference that the Masters could hear Dahano if they wanted to. Anger they let a person keep, so long as he followed their law. Some day, in some way, that anger would rise and tear down their golden city, but the Masters with their limitless power couldn't help but laugh at the thought.

Perhaps they were right. But last

night, as the smoke of Borthen's pyre rose to mingle his soul with those that had gone before it into the sky, Dahano'd seen lights that weren't stars, and faint threads reaching down toward the Masters' golden city on the plain. It was as though the souls of all the people who had burned in funeral hollows behind all the villages were stirring at last.

So now Dahano sat in his doorway, the last of his line, waiting until it was time to go out and work in the hated fields, and wondering if perhaps the golden buildings would come crashing down at last, and the Masters die, and the people of the villages be free again.

But it wasn't a new hope with him or with any of the other villagers. Sometimes a person was driven to believe he could overcome the Masters; rage or thoughts turned too long inward clouded his reason. He rebelled; he cursed a Master or disobeyed a command, and then his foolish hope only caused him to be commanded to die, to die, and to hang in the square. Sometimes a person in cool thought wondered how close a watch the Masters kept. He stayed in his hut when the time came to work, or stayed awake at sleeping time in the hope that the Masters didn't see into quite every person's head. These, too, were always proved mistaken and died.

Dahano kept his omens to himself. An old person learns a great deal of patience. And the Headman

of a village learns great caution along with his great anger. He would wait and see, as all his life had taught him. He knew a great number of things; the proper ways to live, the ways of keeping his people as safe as a person could, and all the other things he had learned both from what his father had passed on to him and what he had thought out for himself. But most of all, he knew a slow, unquenchable, immovable waiting.

In the hut next door, he heard Gulegath clatter his cookpot noisily back down on the oven. Dahano's expression sharpened and he listened closely, trying to follow the younger person's movements with his ears.

Gulegath was an angry one. All the villagers were angry, but Gulegath was angry at everyone. Gulegath wouldn't listen to wiser persons. He kept to himself. He was too young to realize how dangerous he was. He was often rude, and never patient.

But Dahano was Headman of the village, and every villager was his concern. It was a Headman's duty to keep his people as safe as possible—to keep the village whole, to protect the generations that weren't yet born—in the end, to protect that generation which would some day come and be free. So, every person—even Gulegath—must be kept safe. Dahano didn't like Gulegath. But this was unimportant, for he was Headman first and Dahano second, and a Headman neither likes

nor dislikes. He guards the future, remembers the things that must be remembered and passed on, and he protects.

Gulegath appeared in his doorway—a slight, quick-movemented person who seemed younger than he really was. Dahano looked toward him.

"Good day, Gulegath."

"Good day, Headman," Gulegath answered in his always bitter voice, shaping the words so they sounded like a spiteful curse. He was still too young to be a man; coming from his thin chest, the sound of his voice had no depth, only an edge.

Dahano couldn't quite understand the source of that constant, overpowering bitterness that directed itself at everyone and everything. It was almost a living thing of its own, only partly under Gulegath's control. No one had ever injured him. Not even the Masters had ever done anything to him. He'd burned no sons, had never been punished, had never known more sorrow than every villager was born to. This seemed to make no difference to the special beast that went everywhere with him and made him so difficult to live with.

"How soon before we go out to work, Headman?"

Dahano looked up at the sun. "A few more moments."

"Really? They're generous, aren't they?"

Dahano sighed. Why did Gulegath waste his anger on trifles? "I

burned my son last night," he said to remind him that others had greater injuries.

Gulegath extended him no sympathy. He'd found a target for his anger—for now. "Some day, I'll burn *them*. Some day I'll find a way to strike fast enough. Some day I'll hang *their* bodies up for me to look at."

"Gulegath." This was coming too close to self-killing folly.

"Yes, Headman?"

"Gulegath, you're still too young to realize that's a fool's attitude. Things like that aren't to be said."

"Is there a person who doesn't think the same way? What difference if I put it in words? Do you think fear is a wise quality?" Gulegath spoke like a person looking deep inside himself. "Do you think a person should give in to fear?"

"It's not that." Slowly—slowly, now, Dahano told himself. A Headman has a duty to his people. His anger can't keep him from fulfilling it. Be patient. Explain. Ignore his lack of respect for you. "No, Gulegath. It's what too much of that kind of talk can do to you. You must try to discipline yourself. A thought once put in words is hard to change. This anger can turn over and over in your mind. It'll feed on itself and grow until one day it'll pass beyond words and drive you into self-destruction. If you die, the village has lost by that much." *If I let you die, I've failed my duty by that much.*

Gulegath smiled bitterly. "Would

you grieve for me?" His mouth curled. "Let me believe that some day they'll pay for all this: Get up at a certain time, work in these fields, tend these cattle, stop at a certain time, eat again when the Masters command and sleep when the Masters tell you. Be slaves—be slaves all your aching lives or die and hang in the square to cow the others!" Gulegath clenched his thin fists. "Let me believe I'll end that—let me think I'll find a way and some day burn them in their city. Let me suppose I'll be free."

"Not as soon as that, youngster. No person can rebel against the Masters. They see our thoughts, they come and go as they please, appearing and disappearing as they can. They command a hut to appear and it's there, with beds, with its oven, with a fire in the oven. They command a man to die and he dies. What would you do against persons like that? They aren't persons, they are gods. How can we do anything but obey them? Perhaps your some day'll come, but I don't think you or I will bring it."

"What're we to do, then? Rot year after year in this village?"

"Exactly, Gulegath. Year after year after year. Rot, *save ourselves*, and wait. And hope"

He was thinking of the lights in the sky, and wondering.

II

The particular Master who oversaw this village was Chugren. He

was only a medium-tall person, too heavy for his bones, with a pasty face and red-laced eyes. Dahano had never seen him without a sodden breath or a thickness in his tongue. Any person who wasn't a Master ought to have collapsed long ago under the poisons he seemed to swill as thirstily as a villager gulping water from the bucket in the fields. His visits to the village were only as frequent as they had to be. If he thought very often at all about the village, he was too lazy and too uncaring to come and see to it properly. He contented himself with watching it from his palace among the golden spires of the Masters' city on the plains. Watching it with his drunken, stupored mind.

But this morning he was here. The villagers were just leaving their huts to go to the fields when Dahano saw the Master step out into the middle of the square and stand looking around him.

So, Dahano thought. Last night there were lights in the sky, and today Chugren comes for the first time in months.

The villagers had stopped, clustered in their doorways, and everyone looked impassively at Chugren. Then the Master's gaze reached Dahano, and he beckoned as he always had. "Come over here, Dahano."

Dahano bowed his head. "I hear, Chugren." He shuffled forward slowly, stooping, taking on a slowness and age that were feebler than his own. A slave has weapons against

his master, and this was one of them. It seemed like such a trifle, making Chugren wait an extra moment before he reached him. Enough of a trifle so the Master would feel foolish in making an issue of it. But, nevertheless, it was a way of gnawing at the foundation of his power. It meant Dahano was not wholly crushed—not wholly a slave, and never would be.

Finally, Dahano reached Chugren and bowed again. "It is almost time for us to go work in the fields," he muttered.

"It'll wait," Chugren said.

"As the Master wishes." Dahano bowed and hid a thin smile. Chugren was discomfited. Somehow, the slave had scored against the Master once more, simply by reminding him that he was an attentive slave.

"There's time enough for that." Chugren was using a sharp tone of voice, and yet he was speaking slowly. "This village is a disgrace! Look at it—huts falling apart and not a move made to repair them; a puddle of sewage around that broken drain there . . . don't you people do anything for yourselves?"

Why should we? Dahano thought.

"All right," Chugren went on. "If you people can't clean up after yourselves, I suppose I'll have to do it for you. But if it happens again, you'll see how much nonsense I'll tolerate!" He jerked his arm in quick slashes of motion at the huts. He repaired the drain. In a moment, the village looked new again. "There. Now keep it that way!"

Dahano bowed. His twisted, hidden smile was broader. Another victory. It had been a long time since the last time Chugren gave in on the matter of the huts and drains. But he had given in at last, as Dahano had known he must. It was his village, built by him. His slaves had no wish to keep it in repair for him. This was an old, old struggle between them—but the slaves had won again.

He looked up at Chugren's face. "I hear, Chugren." Then he looked more closely.

He couldn't have said what signs he saw in the Master's face, but he had known Chugren for many years. And he saw now that Chugren's hesitant wordings didn't come from a dulled brain. The Master was sober for the first time in Dahano's experience. He sounded, instead, like a child who's not yet sure of all his words.

Dahano's eyes widened. Chugren glanced at him sharply as the Master saw what he knew. Nevertheless, Dahano put it in words:

"You aren't Chugren," he whispered.

The Master's expression was mixed. "You're right," he admitted in a low voice. He looked around with a rueful lift to the corners of his mouth. "I see no one else has realized that. I'd appreciate it if you continued to keep your voice down." The look in his eyes was now both discomfited and unmistakably friendly.

Dahano nodded automatically. He and Chugren stood silently looking at each other while his brain caught up with its knowledge.

Dahano was not a person to go rushing forward into things he understood imperfectly. "Would the Master condescend to explain?" he asked finally, carefully.

Chugren nodded. "I think I'd better. I think it might be a good idea, now I've met you. And we might as well start off right—I'm not your master, and don't want to be."

"Will you come to my house with me?"

Chugren nodded. Dahano turned and motioned the other villagers out into the fields. As the crowd broke up and drifted out of the square, glancing curiously at the Master and the Headman, Chugren followed Dahano toward his hut. Gulegath brushed by them with a pale look at the Master, and then they were in the hut, and Dahano took a breath. "You don't want to be our Master?" His hands were trembling a little bit.

"That's right." It was odd to see Chugren's features smile at him. "Your old Masters are gone for good. My men and I took their places last night. As soon as possible, we're going to set you people completely free."

Dahano squatted down on the floor. It was Chugren's voice and face, though nothing like Chugren's manner. He studied the person again. He saw Chugren, dressed in

Chugren's usual loose, bright robe, with his dough coloring and pouched eyes. And under them was a sureness and firm self-possession quite different from the old Master's drunken, arbitrary peevishness. Dahano was not sure how all this could be—whether this was somehow a trick, or somehow an illusion, or where this false Chugren had come from. But he knew he would find out if he had patience.

"I saw lights in the sky last night. Was that you?"

Chugren looked at him with respect. "You've got sharp eyes, Headman. We had to take the screen down for an instant so we could get through—but, still, I didn't think anyone would spot us."

"Screen?"

"I'd better start at the beginning." Chugren made chairs for them, and when they were both sitting, the Master leaned forward. "I wish I knew how much of this will come through. I've been trying to build up a vocabulary, but there are so many things we have and do that your people don't have words for."

Dahano was curious. How could that be? There was a word for everything he knew. It was possible there were words he hadn't learned—but, no words at all? He mulled the idea over and then put it away. There were more important things to busy himself with.

Chugren was still preoccupied with that problem. "I wish I could explain all this directly. That'd be

even better. But that's out, too."

Dahano nodded. This part was understandable to him. "The Masters told us. Their minds are made differently from ours. They could not even see into ours clearly unless we were angry or excited."

"You're not organized to send messages direct. I know. We used to think it was our instruments, but we ran into it no matter how we redesigned."

"Instruments?"

Chugren pulled up the sleeve of his robe. Strapped to his upper arm were two rows of small black metal boxes. "We weren't born Masters. We use machines—like a person uses a mill instead of a pestle to grind his grain—to do the things a Master does with his mind. Only we can do them better that way. That's how we were able to surprise your Masters last night and capture them."

Dahano grunted in surprise.

"You see," Chugren said, "there aren't any Masters and slaves where I and my men come from. Any man can be a Master, so no one can enslave anyone else. And of what conceivable use is a slave when you can have anything you want just by making it?"

Dahano shook his head. "We have thought on that."

Chugren's nod was grim. "We thought about it, too. We've been watching this world from our . . . our boat . . . for weeks. We couldn't understand what your Masters wanted. They didn't eat your grain

or cattle, they didn't take you for personal servants—they never took you to their city at all. Not even your women. Why, then?"

"For pleasure. We thought on it for a long time, and there is no other answer." Dahano's eyes were sunk back in their sockets, remembering Borthen's body hanging on its frame in the village square. "For pleasure."

Chugren grimaced. "That's the conclusion we reached. They won't come back here . . . re-education or no re-education . . . sick or well, Dahano—ever."

Dahano nodded to himself, staring off at nothing. "Then it *is* true—you're here to free us."

"Yes." Chugren looked at him with pity in his eyes. "You've gotten out of the habit of believing what a Master tells you, haven't you?"

"If what he says is not another of his commands, yes. But I don't think you are like our Masters."

"We're not. We come from a world called Terra, where we have had masters of our own, from time to time. But not for a long time, now. We're all free, and one of the things a free man does is to pass his freedom on to anyone who needs it."

"Another world?"

Chugren spread his hands. "See? There are some things I can't explain. But—You see the stars in the sky. And you see the sun. Well, this world is part of your sun's family. All those stars you see are suns, too—so far away that they look little.



But they're as big as yours, and each of them has worlds in its family, some of them pretty much like yours. Some of them have people living on them. We have a boat that lets us travel from one to another."

Dahano thought about that. When he decided he had it clear in his mind, he asked: "Other people. Tell me—what do you look like when you don't resemble Chugren? Do you look like us? Does everyone?"

Chugren smiled. "Not too different. I can show you." He stood up and touched his arm to his body. His robe flowed into different colors

and two parts, one of which loosely covered his legs and hips while the other hugged his upper body, leaving his arms bare. He changed his face, and the color of his hair and eyes.

He was shorter than the usual person, and the shape of his ears and eyes was odd. His hands were too broad. He looked a good deal like a usual person or Master, except that he was possibly physically stronger, for he looked powerful. Not too different.

Still, Dahano said "Thank you," rather quickly. It was unsettling to look at him, for anyone could see at a glance that he was not born of

any female person on this world.

The Terran nodded in understanding, and was Chugren again. "You see why I didn't come here as myself?"

Dahano could picture it. The villagers would have been frightened and upset. More than that, they would never have dared listen to him.

But there was something else Dahano wanted to clear up. He returned to his point: "Other worlds and other people. Tell me, have you ever been to the world where our Heaven People live?"

"Heaven People?" Chugren frowned, and Dahano knew he was trying to grasp the meaning from his mind.

"The souls of our dead persons," Dahano explained. "I had thought at first that you might be one of them, but I can see you aren't. I thought perhaps, in your boat, you might have visited them." He stopped himself there. A person does not inflict his grief on those who have no share in it.

But his mind had welled up, and Chugren saw his thought. He shook his head slowly. "No, I'm sorry, Dahano. I didn't meet your son."

Dahano looked down. "At least there will be no more." He thought of all the persons who had burned because of the Masters, and all the souls that had gone into the sky. Somewhere, on one of those worlds Chugren spoke of, there were many persons who had waited for this day to come. It was good to know that

they had a home much like this world, which only the Masters had spoiled. It was good to know that some day his own soul would be there with them, and that he would be with his son again.

He remembered the long hours with Borthen, passing on to him the old ways he had learned from his father—the ways of having land of a person's own, and a house, and cattle; the remembered things, saved and kept whole from the days before the Masters were here, coming suddenly from their one village in the faraway mountains.

Many things had been lost, but they were only unimportant things that would be of no use; person's names, and the memory of person's lives. A person lived, died, and his sons remembered him for their lives, but then he began to fade, and his grandsons might never remember him.

The important things had lived on. Dahano knew that had been a great effort. There were always persons who were willing to let themselves forget, and simply live out what lives they had. But always there were persons who would not forget; who waited for the day when the villagers could claim the world for their own again, and need to know how to live without anyone's commanding them.

So, in all the villages, fathers taught their sons, and the sons remembered.

Dahano's face wrinkled in grief

as he thought of his dead son. Borthen had remembered—perhaps too well. He had still been a young man, with a young man's fire in his blood. So he tested Chugren's power, and Chugren—the old Chugren—had commanded him to die for not tending the cattle properly.

Two more days—two more days of patience, Borthen, and I would have my son. I would not be alone. Some day you would have been Headman.

Dahano raised his eyes slowly. There were things to be done, and he was Headman in this village.

"What are you going to do?" he asked Chugren. "Are you going to make us all Masters?"

Chugren shook his head. "No. Not for a long time. And then it's going to be your own people who make themselves Masters. That's why, at first, we weren't going to let you know that anything had happened to Chugren and his fellows. What do you think would happen if we simply went to all the villages and told the people they were free?"

"If you went as you really are?"

"Yes."

"The people would be frightened. Many of them wouldn't know what to do. And afterwards I don't think they'd be happy."

"They'd know somebody came down from the sky and simply gave them their freedom."

Dahano nodded. "It would never be their freedom. It would be a gift

from someone else who might come to take it back some day."

"That's why we've got to go slowly. Today Chugren came to this village and cleaned it up. In a few days, he'll come back and do something else to make things better. One by one, the old Masters' rules will be eliminated, and in a few months, everyone will be free. Some people will wonder what made the Masters change. But it won't have been sudden, and in a few generations, I think your people will have invented a hero who made the Masters change." Chugren smiled. "You, perhaps, Dahano. And then one day the Masters will go away, and their city'll burn to the ground, and that'll be the end of it."

"We'll be free."

"You'll be free, and you'll have your pride. You'll grow, you'll learn—a little faster than you might have, perhaps, and you'll spend less time on blind alleys, I can promise you—and when you have grown enough, you'll be Masters. Without more than a friendly hand to help. I don't think you'd really like it if we gave you everything, and so left you with nothing."

"A friendly hand—yes, Chugren." Dahano stood up. "That's all my people want." He felt his back straighten, and his head was up. "No more commands. No more Masters coming to give orders. No more working in fields which do not belong to anyone, doing what you do not wish to."

"I promise you that, Dahano."

"I believe you."

Chugren smiled. "On my world, friends clasp hands."

"They do the same here."

They stepped toward each other, their arms outstretched, and shook hands.

III

It was three days later, again in the early morning, when Chugren returned to the village square. Dahano, waiting in his doorway, saw the surprise on the faces of the villagers waiting to go out to the fields. None of the Masters had ever come this often. As Chugren beckoned to him and Dahano moved forward, none of the villagers made a sound.

They might not know what was happening, Dahano thought, but they could feel it. Freedom had an excitement that needed no words to make itself known.

He stopped in front of Chugren and bowed. "I hear, Chugren," he said, a faint smile just touching the corners of his mouth too lightly for anyone but Chugren to see.

"Good," Chugren answered harshly. Only Dahano saw the twitch of his eyelids. "Now—it's almost time for the next planting. And this time you're going to do it right. You're wearing out the land, planting the same fields year after year. Furthermore, I want to see who the lazy and stupid ones among you are. I want every family in this village to take a plot of ground. I don't care where—take your pick—as long as it's

fresh ground. The plot has to be large enough to support that family, and every family will be responsible for its work. It's not necessary to follow the old working hours, so long as the work's done. Nobody will work anyone else's plot. If a person dies, his plot goes to his oldest son. Is that clear?"

Dahano bowed deeply. "I hear, Chugren. It will be done."

"Good. See to it."

"I hear."

"If the plot is too far away from the person's house, I will give him a new house so he doesn't waste his time walking back and forth. I'll have no dawdling from you people. Is *that* clear?"

"I hear, Chugren." Dahano bowed again. "Thank you," he whispered without moving his lips. Chugren grunted, winked again, and went away. Dahano turned back toward his hut, careful not to show his joy.

They were free of the fields. In every village this morning, the Masters had come and given their particular village this freedom, and the days of getting up to go to work at the Masters' commands were over.

There was a puzzled murmur coming from the crowd of villagers. One or two persons stepped forward.

"Headman—what did he mean? Aren't we to go out this morning?"

"You heard what he said, Loron," Dahano answered quietly. "We're to pick out plots of our own, and he'll give us houses to go with them."

"But, Headman— The Masters

have never done this before!" The villagers were clustering around Dahano now, the bewildered ones asking him to explain, the thoughtful ones exchanging glances that were slowly coming alight.

It was one of those—Carsi, who'd never bent his head as low as some of the others—who shouted impatiently: "Who cares what or why! We're through with herding together in these stables. We're through with plowing Chugren's fields, and *you* can stay here and talk but *I'm* going to find my land!"

Dahano stepped into his hut with a lighter heart than he ever remembered, while outside the villagers were hurrying toward their huts, a great many of them to pack up their bundles and set out at once. Then he heard Gulegath stop in the doorway and throw his bitterness in before him.

"I think it's a trick!"

Dahano shrugged and let it pass. In a few weeks, the youngster would see.

"I suppose you think it's all wonderful," Gulegath pressed on. "You forget all of his past history. You discard every fact but the last. You don't stop to see where the poison lies. You bite into the fruit you think he's handed you, and you say how good it tastes."

"Do you see what his trick is, Gulegath?" Dahano asked patiently.

"If there's no trick," Gulegath answered, "then there's only one other explanation—he's afraid of us. Nothing else fits the evidence as I

see it. He sees that his days are almost over, for some mysterious reason, and he's trying to buy his life. Somehow, that seems ridiculous to me."

"Perhaps," Dahano answered shortly. He didn't like Gulegath's gnawing at him like this. "But in the meantime, will you please go out and see where the new plots are, so I'll know where my village is?"

Grow older soon, Gulegath, Dahano thought. How much can my patience stand? How much longer will I have to watch you this closely? Grow wiser, or even these Masters might not let you.

He thought of telling Gulegath all of the truth. It might help. But he decided against it. If he told him, the youngster would surely react in some unsettling manner.

IV

Dahano sat in his doorway, looking out at the great empty spaces where the village huts had been, and beyond them at the old fields losing their shape under the rain that had been pounding them steadily for hours each day. That, too, was not by accident, he guessed.

He looked around. Here and there the old huts were still standing—or rather, new houses stood where families had decided to stay. Straight roads stretched out in the directions of the farms.

Dahano smiled to himself. This is freedom, he thought. New, large houses, each set apart. The cattle

barn gone, and the herds divided. The granaries taken away, and each house with its own food store until the new farms can be harvested.

And that is the best freedom of all. We have houses, but we would sleep in the open. We have food, but we would go hungry. Chugren has given us our last new lengths of cloth, but we would go naked. For we have freedom—we have our land that no one can take from us, and we live without the Masters' laws.

It was true. They did. Even so soon, though Chugren and the other "Masters" still came and went among them, playing out their parts before they let go the reins entirely, already there were many people who had lost their fear of them. The old ways were coming back, even before the "Masters" withdrew. From everywhere, Gulegath and all of Dahano's other messengers brought him the same news. All the villages were spreading out, the homesteads dotting the green face of the plains, and there were persons plowing out new ground almost at the foot of the golden city that had always stood alone before. The villagers had remembered. The fields were planted and the wells were dug as their great-grandfathers had done, and the people drew their strength from the land.

In my lifetime, he thought. I see it in my lifetime, and when my soul goes to the Heaven People's world, I will be able to tell them we live as people ought to.

He raised his head and smiled as he saw Chugren step into the road in front of his house.

"Chugren."

"Good day, Headman." Chugren wiped his hand over his forehead, taking away perspiration. "I've had a busy day."

A clot of excitement surged through Dahano's brittle veins. He knew what Chugren was going to tell him.

"How so?"

Chugren smiled. "I don't suppose this'll be any great surprise. I went out and inspected all the homesteads from this village. All I have left to do are these few here, and that'll be that. I found fault in every case, was completely disgusted, and finally said that I had no use for lazy slaves like these. I said I was tired of trying to get useful work out of them, and from now on they'd have to fend for themselves—I wasn't going to bother with them any longer."

Dahano took a breath. "You did it," he whispered.

Chugren nodded. "I did it. It's done. Finished. You're free."

"And the same thing happened in all the other villages?"

"Every last one of them."

Dahano said nothing for a few moments. Finally, he murmured: "I never quite believed it until now. It's all over. The Masters are gone."

"For good."

Dahano shook his head, still touched by wonder, as a man can know for months that his wife will

give him a child but still be amazed when it lies in his hands. "What are you going to do now?"

"Oh, we'll stay around for a while—see if we've missed anything."

"But you won't give orders?" Dahano asked quickly.

Chugren laughed gently. "No, Headman. No orders. We'll just watch. Some of us will always be around, keeping an eye out. You'll never have any wars that come to much, and I don't think you'll have cloudbursts washing out your crops too often, but we'll never interfere directly."

Dahano had thought he was prepared for this day. But now he saw he was not. While there had been no hope, he had been patient. When things were growing better every day, he could live in confidence of tomorrow. But now he had what he longed for, and he was anxious for its safety.

"Remember — you gave your promise." He knew he sounded like a nervous old man. "Forgive me, Chugren—but you could take all this back in the time of a heartbeat. I . . . well, I'm glad none of my people know as much."

Chugren nodded. "I imagine there are times when a person would just as soon not know as much as he does." He looked directly into Dahano's eyes. "I gave my promise, Headman. I give it again. You're free. We've given our last command."

They reached out and shook hands.

"Thank you, Chugren."

"No one could have seen what the Masters were doing and let it go on. You don't owe me any special thanks. I couldn't have lived with myself if I'd seen slavery and not done my best to wipe it out."

They sat together silently in the doorway for a few moments.

"Well, I don't imagine we'll be seeing very much more of each other, Headman."

"I'm sorry about that."

"So am I. I have to go back to Terra and make my report on this pretty soon."

"Is it far?"

"Unbelievably far, even for us. Even with our boat's speed, it'll be months before I'm home. We sent the boat back with your old Masters, for example. It won't return for another ten days, though it started straight back. It may be a year before word comes of how well your old Masters are taking their re-education. Probably, I'll come back with it."

"I'm an old man, Chugren. I may not see you then."

"I know," Chugren said in a low voice. "We've never found a way to keep a person from wearing out. What're you going to do 'til then? Rest?"

Dahano shook his head. "A person rests" forever when he joins the Heaven People. Meanwhile, my village needs its Headman. There are many things only a Headman can do."

"I suppose so." Chugren stood up. "I have to go finish up these last homesteads," he said regretfully. "Good-by, Headman."

"Good-by, my friend," Dahano answered.

V

It was a week later. Dahano sat with the sun warming his body. His stomach was paining him to some extent—yesterday it had pained him less—and the sun felt good.

I'm old, he thought. An old man without too many sunny days left for him. But in these past days, I've been free.

It's good to be Headman where people live the way they ought to live; the way our fathers told us, the way their fathers told them, the way people never forgot in spite of everything the Masters did to us. It's good to know we'll live this way forever.

He shifted the length of cloth wrapped around his hips. It was good cloth Chugren'd given them. It ought to last a long time.

He looked up as he heard Gulegath come up to him.

"Headman."

"Yes, Gulegath?"

Gulegath was frowning. "Headman—Chugren's over at Carsi's house. He's giving Carsi's wife orders on how to live."

Dahano pushed himself to his feet, half-afraid and half-angry at Gulegath for making a mistake of some kind. "I want to see for myself." He walked in the direction

of Carsi's house as quickly as he could, and Gulegath came after.

It was true. As he came to Carsi's house, he heard Chugren arguing with Terpet, the woman. Dahano's face and insides twisted. He was afraid and unwilling to think what this could be. He wondered what could have happened.

Frightened, he came quickly into the front room and saw Terpet standing terrified against one wall, clutching her small daughter and staring wide-eyed at Chugren as the Master stood in front of her, his face angry.

Dahano peered at Chugren, but it was still the different Chugren, not the old Master. Except that he was acting exactly the way the old Master used to. While Gulegath stayed warily in the doorway, Dahano moved forward.

"I told you last time," Chugren was saying angrily. "Do you *want* your daughter to be crippled? I told you what she needed to eat. I explained to you that eating nothing but that doughcake and those plants was making her sick. I explained how to prepare them and give them to the girl. And you said you'd do it. That was two days ago! Now she's getting worse, and you're still feeding her the same old way!"

Drawing himself up, Dahano stepped between them. "This is my duty, Chugren," he snapped. He felt no further fear. He knew nothing but disappointment and anger at Chugren's betrayal of his word.

Chugren stepped back. "I'm glad you're here, Dahano," he said. "Maybe you can get through to this woman. She's letting that little girl get sick—deliberately. I told her what to do, but she won't listen to me."

For the moment, Dahano turned his back on Chugren. "Terpet!" he said sternly. "Is your daughter sick?"

The woman nodded guiltily, looking down at her feet. "Yes, Headman." The little girl stared up at Dahano, hollow-eyed.

"How long has she been sick?"

"A week or two," Terpet mumbled.

"Where is your man?"

"In the fields. Working."

"Does he know she's sick?"

Terpet shook her head. "She's asleep when he goes out and comes home. She sleeps a lot."

"I'm your Headman. You should have told me."

"I didn't want to bother you."

The woman kept shifting her eyes away from him.

"If somebody's sick—particularly if a child is sick—I *must* be told! Didn't your mother teach you the old ways?"

Terpet nodded.

"Did Chugren come here two days ago? Did he see the girl was sick? Did he tell you what food to give her?"

"Yes."

"Why didn't you tell me *that*?"

"He . . . he wasn't angry, last time. He just gave me the plants,

and he told me to give them to Theva instead of the *shuri* greens."

"What did you do with the plants?"

"I . . . I took them. He's a Master, and I didn't want to get him angry. When he was gone, I threw them away. He wanted me to give them to Theva without . . . without cooking them."

"*Raw?*"

"Yes."

Dahano turned around quickly, shocked. "That was a terrible thing to do!" He felt the beginnings of desperation. "Chugren, you have no right to tell this woman what to do. You're no longer to come giving orders. You're no longer to tell us what to eat. You gave me your word!"

"I—" Chugren looked like a man who had just seen a new plowshare crack. "But . . . Dahano . . . that baby's well on her way to rickets! She'll be a cripple. And look at this place—" He pointed into the next room. "*Smell* it!"

Dahano's temper strained at his self-control. "She keeps her milk cow in there. How do you want it to smell? Do you expect a woman with a sick child to clean every day?"

"She's got a cattle shed."

"The next room is closer. She can milk the cows without having to go out of the house and leave her child."

"You can get sick and die from things like this! That cow could go tubercular. And there's a sickness



called anthrax. Do you know how a person dies from that? He gets running sores in his flesh, he burns up with fever, and finally he dies out of his head, with his body full of poisons. Or if you get it from the air—which is probably what'll happen here—the sores are in your lungs. Do you think that's a good thing to have happen? To a little girl like that!" Chugren was very close to shouting.

"Did you think we'd forgotten?" Dahano snapped back. "Do you think you can tell us stories like that and make us forget how a person should live? What're these 'rickets' and 'anthrax' things? Names to frighten ignorant people with? A person's either whole and strong or isn't. He either lives or dies accord-

ing to the nature of things. He eats what people have always eaten, when you—*Masters!*—will let him. He keeps his homestead and house the way a person ought to. You mustn't use these silly arguments to once again tell us how to live, what to eat, how and where to keep our cattle." Dahano felt a terrible helplessness. "You mustn't!"

"Listen, Dahano, there's nothing congenitally wrong with that child! It's the food she's given! If her mother would give her some of these other things to eat—or if she took her out in the sun more often . . ."

"If Terpet can eat the food, so can the girl. And the sun's too strong for young children. It hurts their heads and burns their brains.

Now, that's the end of this matter. If you're not going to give orders any more, then don't give orders any more!"

Chugren took a deep breath. "All right!" He turned around abruptly, growling something that sounded like "So now I'll have to personally concentrate Vitamin D in her. Every day." He jerked his head in disgust and went away.

Dahano turned back to Terpet, conscious that his chest was heaving. "Very well. That's taken care of. I'll be back in a week to see the child."

The woman nodded, still trembling, and Dahano's voice grew gentler. "I'm sorry I had to shout. He made me angry. I hope Theva gets better. But you must try to remember how a person ought to live. It's been a long time since we last had our freedom. We must live properly, for if we don't we won't deserve to keep it."

The woman had calmed a little. "Yes, Headman," she whispered.

"In a week, then." He walked out of the house, with Gulegath trailing beside and a little behind him. He walked head-down, trying to puzzle out what had happened.

"They meant it when they promised to leave us alone. I know they did. Why should they be playing this game with us? They had us under their thumbs. They let us go, but now they're bothering us again. If Chugren's doing it here, the rest of them are doing the same in the other

villages." He shook his head, conscious of Gulegath just beside him, thinking of how the youngster was being made to look foresighted through no virtue of his own. "But there's nothing we can do. We depend on the honesty of their promise. If they're going to make us slaves again, there's no stopping them. But—why? It makes no sense!"

He waited for Gulegath's bitter comments, knowing that they would express his own mood as well as the youngster's. But Gulegath, inexplicably enough, sounded thoughtful:

"I . . . don't know," the youngster murmured. "You're right. It makes no sense—that way." Dahano felt peculiarly disappointed. "I wonder," Gulegath went on, mostly to himself. "I wonder . . . he didn't sound so much like a person whose commands have been disobeyed. He sounded, instead, like a father who can't get his stupid child to understand something important—" Gulegath seemed wrong-headedly determined not to take his opportunity for saying "I told you so."

Somehow, this angered Dahano more than anything else could have done.

What kind of dedicated perversity was this? he thought in exasperation. Couldn't the youngster abide to *ever* agree with his Headman? Hadn't he been the one who hated the Masters so much? Then why was he defending them now? What kind of knot did he have in the threads of his thinking?

"When I want bad advice," Dahano snapped, "I'll find it for myself."

Gulegath, busy with his wonderings, barely grimaced as though a bug had flown against his cheek for a brief moment and then gone on.

Dahano scowled at being so ignored. Then he walked on stiffly, trying to understand just what kind of complicated scheme the new Masters might be weaving. But it wouldn't come clear no matter how hard he tried.

The pain in his belly was worse than ever. He walked along, his mind churning, trying to ignore the teeth gnawing at his stomach.

He had realized, in the days that followed, that the only thing to do was wait and see. There was no other way. He heard more stories that his runners brought from other villages. Everywhere it was the same. The Masters were constantly poking and prying, trying to bully people into following their orders again.

They turned up at house after house, not only telling persons what to eat but how to drink, too. They took away people's cattle wells, and sometimes their house wells, too, if they had them. True enough, the Masters gave them new wells—but they were strange, overly-deep things a man couldn't use a well-sweep with. The Masters gave them long ropes wound around a round log with a handle to turn, but that was no way to get well water. It was a needless time-waster. A person could

see no sense in the new wells, which were often far away from the cattle, when the old ones had been closer and much easier to use. Many persons waited until the Masters were gone again and then re-dug proper wells.

It made no difference that the Masters used words like "cholera" and "typhoid" to justify themselves. These were meaningless things, and meanwhile a person's life was made that much harder. Was this the freedom they'd promised?

And furthermore, no one was sick. A number of people began to get sick, for some reason or another, but they always grew strong in their souls and well again after the first signs had shown themselves. So Dahano was puzzled. What were the Masters so incensed about?

He could only go about his Headman's duties day by day, and calming his people as well as he could, as though his freedom might still be there tomorrow. But the contentment of it was gone, and he grew short-tempered with strain while the fire in his stomach gave him no rest.

Dahano had just returned home after attending to a spoiled child when Chugren came into his doorway.

"May I come in, Headman?" the Master asked tiredly. His shoulders were slumped, and his eyes were rimmed pink with sleeplessness.

"Please yourself," Dahano growled, sitting in a corner with his arms

folded across his belly. "I thought you were leaving last week."

Chugren made a chair and dropped into it. "The ship came back, all right. No word yet on your old Masters' progress, but I wonder, now, what that report'll be like. And I'm staying here indefinitely. Dahano, I don't know what to do."

"That's a peculiar thing for a Master to say."

Chugren's mouth quirked. "I don't want to be a Master."

"Then go away and leave us alone. What more do you want from us?"

"I . . . we don't want anything from you. Dahano, I'm trying to find an answer to this mess. I need your help."

"What," asked Dahano bitterly, "does the Master ask of his slave?"

For a second, Chugren was blazing with frustrated anger. Dahano's lip lifted at one corner as he saw it. Good. These Masters were inexperienced in the peculiar weapons only a slave could use. Then Chugren's head dropped and, in its own way, his voice was bitter, too.

"You're not going to give an inch. You're going to go right on killing yourselves."

"No one's dying."

"No thanks to you. Do you know none of us are doing anything any more but spot-checking you people for diseases and dietary deficiencies? You're scattered from blazes to breakfast and we're forced to hop around after you like fleas." Chugren looked at Dahano's robe. "And it

looks like we're going to have to extend the public health program, too. Don't you ever wash that thing? Have you any idea of what a typhus epidemic would do to you people? You haven't got an ounce of resistance to any of these things."

"Another mysterious word. How many of them do you know, Master? I have no other robe. How can I wash this one? Is it any of your concern whether I do or not?"

"Well, *get* another robe!"

"I need fiber plants to grow. And I'm only one man with no one to help him—with no son. My field has to grow food. What's it to you—what's it to me?—if my clothes're dirty while I'm a healthy person with food in the house? A person first feeds himself. Then he worries about other things."

"Do you want me to get you another robe?"

"No! I'm a free person. I don't need your charity. You can force more cloth on me, but you can't make me wear it—unless you want to break your word completely."

Chugren beat his fist down at the air. "It's not charity! It's an obligation! If you take responsibility for someone—if you're so constituted that you're equipped for responsibility—then there's nothing else you can do. But I'm not getting through to you at all, am I?"

"If my Master wishes to teach me something, I can't stop him."

"The Devil you can't. You've gone deaf."

"Chugren, this is fruitless. Say

what you want from me and I'll have to do it."

"I'm not here to force you into anything! I'm not your Master . . . I don't want to be your Master. Sometimes I wish I'd never found this place."

"Then go away. Go away and leave us alone. Leave us alone to live the way we want—the way people ought to live."

Chugren shook his head tiredly. "We can't do that, either. You're our tarbaby. And I don't know what we're going to do with you. Bring your old Masters back, maybe, with apologies. You're their tarbaby, too, and they've had more experience. The way you're scattered out—the incredible number of things you don't know—this business of following you around one by one, trying not to step on your toes but trying to keep you alive, too—it's more than we can take."

Dahano stood up straight. "Leave us alone! We don't want you sneaking around us. People should be free—you said that yourself. Don't come to me talking nonsense! Either we're your slaves, and you're a liar, or we're free and we don't want you. We just want to live the way people ought to live!"

Chugren's eyes were widening. "Dahano," he said in a strange voice, "What were you doing tonight?"

"I was attending to a spoiled child. Every Headman's duties include that."

Chugren looked sick. "What do you mean by a spoiled child?"

"You've seen it in my head. It was a child born double. It had divided in two and split its soul. Neither half was a whole person."

"What did you do with them?"

"I did what's done with all spoiled or weak children. They aren't people."

"You killed those twins?"

"I killed it."

Chugren sat wordless for a long time. Then he said: "All right, Dahano. That's the end."

VI

It was early morning in the village. Dahano stood in his doorway, looking out at the houses clustered tightly around the square. Between the closely-huddled walls, he could look out to the slope beyond the village where the fields he hated were stretched furrow on furrow, waiting to be worked.

Today the houses were smaller, he saw. The cattle would be back in their long shed, no man's property again. Chugren's said he'd do it if Dahano didn't get the villagers to keep them out of the houses.

Dahano's lip curled. A slave has his weapons. Among them is defiance where the blame could be spread so wide the Master couldn't track it down. If Chugren asked, he could always say he'd told everyone. He couldn't be blamed if no one'd listened. It became everybody's fault.

It was only when one distinct person rebelled that an example could be made. There'd be none of

those as long as Dahano was Headman. The village would lose as few people as possible. It would stay alive, save itself, wait—for generations, patiently, stubbornly, always waiting for the day when people could live as they ought to, in freedom.

He saw Chugren step into the middle of the square, and he stiffened.

"Dahano!"

"I hear, Chugren," Dahano muttered. He shuffled forward as slowly as he thought the Master would tolerate. He saw that Chugren was haggard. Dahano sneered behind his wooden face. Debauching himself in the comforts of his golden city, no doubt. None of the Masters ever came near the villages unless they absolutely had to, any more. "I hear." Liar. Tyrant.

"I took the cattle back."

Dahano nodded.

"That was the last of your freedoms."

"As the Master wishes."

Chugren's mouth winced with hurt. "I didn't like doing it. I don't like any of these things. I don't like penning you up in this village. But if I've got to watch you all, every minute, I've got to have you in one place."

"That's up to the Master."

"Is it?"

"What orders do you have for today, Master?"

Chugren reached out uncertainly, like a man trying to hold a handful of smoke. "I don't have any, Da-

hano. I was hoping this last thing—I'm trying to get something across to you. One last time— You were *dying*, Dahano. When we moved you back here, we saw little animals living in your stomach—"

Coldly, Dahano saw that Chugren actually did seem troubled. Good. Here was something to remember; one more way to strike back at the Master.

"All right, then," Chugren murmured. "It seems we're no smarter than your old Masters. Go out in the fields and raise your food." He turned and walked away, and then he was gone.

Dahano smiled thinly and went back to his hut. But he found Gulegath waiting.

The sight of the youngster was almost too much for Dahano to bear. As he saw that Gulégath himself was furious, Dahano almost lost control of the dignified blankness that was a Headman's only possible expression. What *right* had this young, perversely foolish person to be as angry as that? He wasn't Headman here. He wasn't old, with his hope first fanned and then drowned out in a few terrible days. He wouldn't ever know how close they'd all come to freedom, and how inexplicably they had lost it again.

"Well, Dahano—" Dahano saw the nearer villagers stiffen as the youngster called him by his name. "Well, Dahano—so we're slaves again."

"Do you mean that's my fault?"

This was almost too far—almost too much for a person to say to him.

"You're Headman. You're responsible for us all." Dahano saw that all of Gulegath's anger—all his bitterness—were out of their flimsy cage and attacking only one man and one thing. For the first time, he saw a man in Gulegath's eyes. He saw a man who hated him.

"Can I defy the Masters?" There was a growing crowd of villagers around them.

"Can you *not* defy the Masters? Can you, somewhere, find the intelligence to try and work *with* them? You *stubborn*, willful old man! You won't change, you won't learn, you won't ever stop beating your head against a wall! Did it ever occur to you to learn anything about them? Did you ever try to convince them they could take the wall down?"

That was too far and too much.

"Are you questioning your Headman? Are you questioning the ways we have lived? Are you saying that the things we have held sacred, the things we have never permitted to die, are worthless?"

Gulegath's face was blazing. "I'm saying it!"

From a great distance within himself—from a peak of anger such as he had never known, Dahano spoke the ritual words no Headman in the memory of people had been forced to speak. But the words had been remembered, and told from father to son, down through the long years against this unthinkable day.

"You are a person of my village, but you have spoken against me. I am your Headman, and it is a Headman's duty to guard his village, to keep it from harm, and to remember the things of our fathers which have made us all the persons we are. Who speaks against his Headman speaks against himself."

The persons nearest Gulegath took his twisting arms and held him. They, too, had never heard these words spoken in real use, but they had known they must be today.

Suddenly, Gulegath's anger had gone out of him. Dahano felt some animal part of himself surge up gleefully as he saw Gulegath turn pale and weakly helpless. But he also saw the immovable clench in his jaw, and the naked anger as strong as ever in his eyes despite the fear that was rising with it.

"Kill me, then," Gulegath said in a high, desperate voice. "Kill me and dispose of all your troubles." Desperate it was—but it was unwavering, too, and Dahano's hands reached out for Gulegath's thin neck with less hesitation than they might have.

"A person is his village, and a village is its Headman. So all things are in the Headman, and no person can be permitted to destroy him, for he is the entire proper world.

"I do this thing to keep the village safe." His old hands went around Gulegath's throat. Gulegath said nothing, and waited, his eyes locked, with an effort, on Dahano's.

Chugren came back, and they were flung apart by his shoulders and arms, as though the Master had forgotten he had greater strengths.

"Stop that!"

The villagers fell back. Dahano got to his feet, wiping the dust of the ground out of his eyes. Gulegath was watching the Master carefully, uncertain of himself but certain enough to stand straight and probe Chugren's face. Chugren looked at Dahano.

"The Master commands," Dahano muttered.

"He does." Chugren looked sideways at Gulegath. "Why didn't you ever call attention to yourself before?"

Gulegath licked his lips. "I tend to save my bravery for times when it can't hurt me."

Dahano nodded scornfully. Gulegath had only rebelled in words. He'd been nothing like Borthen—for all that Borthen was needlessly dead.

"Times when it can't hurt you, eh? What about this time?"

Gulegath shrugged uncomfortably. "There's a limit, I suppose."

Chugren grunted. "I think we'll be keeping you. And thanks for the answer." Sudden pain came into his face. "And quite an answer it is, too."

"Answer?"

Chugren swung back toward Dahano. "Yes. So you know the proper ways to live, do you? You know how a person should keep his house,

and work his ground, and grow his food, do you?"

The villagers were still.

"There are other worlds." Chugren drew himself up, touched his chest, and began to speak. His words rolled over the village in a voice of thunder.

"You're going to a far land, all of you. We can't stand the sight of you any more. We're going to send you to a place where you can live any way you please, and we'll be rid of you."

There was a swelling murmur from the villagers.

"What kind of place, Chugren?" Dahano demanded. "Some corner where we cannot ever hold up our heads—some corner from which we can never rise to challenge you?"

Chugren shook his head. "No, Headman. A world exactly like this. If we can't find one that fits, then we'll change one to suit. There'll be plains like these, and soil that'll accept your plants, and fodder for your cattle."

"I don't believe you."

"Suit yourself. We're going to do it."

Now Dahano, once again, couldn't be sure of what to think.

Gulegath touched Chugren's arm. "What's the catch?"

"Catch?"

"Don't sidestep. If that was the whole answer, you could reach it by simply leaving us alone here."

Chugren sighed. "All right. The day'll be one hour shorter."

Dahano frowned over that. One

hour shorter? How could that be? A day was so many hours—how could there be a day if there weren't hours enough to fill it?

He preoccupied himself with this puzzle. He failed to understand what Gulegath and Chugren were talking about meanwhile.

"I . . . see—" Gulegath was saying slowly. "The plants . . . they'll grow, but—"

"But they won't ripen. Unless the villages move nearer the equator. And if that happens, nothing will be right for the climate—neither the houses, nor the clothes, nor any of the things your people know. But we won't move them. We won't change them. And all the rules will almost work."

Dahano listened without understanding. How could simply moving to another place change the kind of house a person needed?

Gulegath was looking down at the ground. "A great many people will die."

"But to a purpose."

"Yes, I suppose."

"What else can we do, Gulegath? We can't push them. They'll have to change of themselves." Chugren put his arm around Gulegath's shoulders. "Come on," he said like a man anxious to get away from a place where he has committed murder.

Gulegath shook his head. "I think I'll stay." He looked around at the villagers. "I seem to want to go with them."

"They'll kill you. We won't be around to stop them."

"I think they'll be too busy."

Chugren looked at him for a long moment. Then he took a deep breath, started a gesture, and went away.

Gulegath looked around again, shook his head to himself, and then walked slowly back toward his hut. The villagers moved slowly out of his way, mystified and upset by something they saw in his face.

Dahano looked after him. So you think you'll be Headman after me, he thought. You think you'll be the new Headman, in the new land.

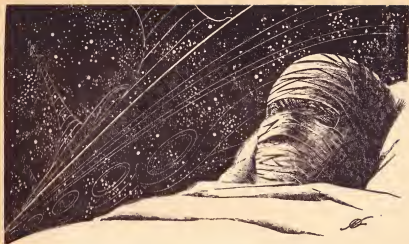
Well, perhaps you will. If you're clever enough and quick enough. I don't know—there's something you seem to know that I don't—perhaps you'll make another error so I can kill you for it. I wish—

I don't know. But you'll pay your price, no matter what happens. You'll learn what it is to be Headman. And you won't have the words of your fathers to help you, because you've never listened.

Dahano began walking across the square, ignoring the villagers because he had nothing to say to them. He thought of what it would be like, the day they would all be filing aboard the Masters' sky boats, carrying their belongings, driving their cattle before them, and he thought back to the night he'd looked up and seen lights in the sky.

Omens. For good or for bad?

THE END



THE MILE-LONG SPACESHIP

They knew that some entity, living somewhere, had awareness of them, and their immense ship. But they couldn't find out where he was, because he didn't know. . . .

BY KATE WILHELM

Illustrated by Freas

Allan Norbett shivered uncontrollably, huddling up under the spotless hospital sheet seeking warmth. He stirred fretfully as consciousness slowly returned and with it the blinding stab of pain through his head. A moan escaped his lips. Immediately a nurse was at his side, gently, firmly forcing him back on the bed.

"You must remain completely still, Mr. Norbett. You're in St. Agnes' Hospital. You suffered a fractured skull in the accident, and surgery was necessary. Your wife is outside waiting to see you. She is uninjured. Do you understand me?"

The words had been spoken slowly, very clearly, but he had grasped only fragments of them.

What accident? The ship couldn't have an accident. He'd be dead out there in space. And his wife hadn't even been there.

"What happened to the ship? How'd I get back on Earth?" The words came agonizingly, each effort cost much in pain and dizziness.

"Mr. Norbett, please calm yourself. I've rung for your doctor. He'll be here presently." The voice soothed him and a faint memory awakened. The wreck? His wife? HIS WIFE?

"Clair? Where's Clair?" Then the doctor was there and he also was soothing. Allan closed his eyes again in relief as they reassured him about Clair's safety. She would be here in a moment. The other memories receded and mingled with the anaesthetic dreams he'd had. The doctor felt his pulse and listened to his heart and studied his eyes, all the while talking.

"You are a lucky man, Mr. Norbett. That was quite a wreck you were in. Your wife was even luckier. She was thrown clear when the bi-wheel first hit you."

Allan remembered it all quite clearly now and momentarily wondered how he'd come out of it at all. The doctor finally finished his examination and smiled as he said,

"Everything seems perfectly normal, considering the fact that you have been traipsing all over space for the last five days."

"Days?"

"Yes. The wreck was Saturday. This is Thursday. You've been un-

der sedation quite a bit—to help you rest. There was extensive brain injury and absolute quiet was essential. Dr. Barnsdale performed a brilliant operation Saturday night."

Allan had the feeling the doctor was purposely being so loquacious to help him over the hump of the shock of awakening after almost six days. He was in no pain now while he kept his head still, but talking brought its own punishment and he was grateful to the doctor for answering unasked questions. The doctor waited by his side for a second or two, then in a professional tone he told the nurse to bring in Clair.

And again to Allan: "She can only stay a few minutes—less if you begin talking. I'll be in again this afternoon. You rest as much as possible. If the pain becomes severe, tell your nurse. She's instructed to administer a hypo only if you request it." Again he laughed jovially, "Don't let her talk you into it, though. She is really thrilled by that space yarn you've been telling and might want to put you to sleep just to hear more."

Clair's visit was very brief and very exhausting. Afterwards he rested comfortably for nearly an hour before the pain flooded his whole being.

"Nurse."

"Yes, Mr. Norbett?" Her fingers rested lightly on his wrist for a moment.

"The pain—"

"Just try to relax, sir. It will be

gone soon." He didn't feel the prick of the needle in his arm. But the pain left him in layers, gradually becoming a light enough load to permit sleep. And the coldness.

Space was so cold. No winds to blow in spurts and gusts, to relieve the cold by their absence, only the steady, numbing same black, empty cold. He turned his head to look over his shoulder and already Earth was indistinguishable among the countless stars and planets. Never had man, he told himself, seen all the stars like this. They were incredibly bright and even as he viewed them, he wondered at the movement of some of them. There was a visible pulsation, sometimes almost rhythmically, other times very erratic. A star would suddenly seem to expand enormously on one side, the protuberance around it glow even more brightly then die down only to repeat the performance over and over. Allan wished he knew more about astronomy. He had only the most rudimentary knowledge that everyone had since the first spaceship had reached Mars. He had been out of school when space travel had become possible and had never read past the newspaper for the information necessary to understand the universe and its inhabitants.

He shivered again and thought about the advantages of eyeless seeing. There was no pupil to dilate, no retina to burn or damage, no nerves to protest with pain at the brightness of the sight. It was, he decided smugly, much better to be

here without his cumbersome body to hamper him. Then he suddenly remembered the ship—the mile-long spaceship. For an instant he sent his mental gaze deep into space all around him, but the ship was nowhere to be seen. He surmised it must still be millions of light-years from Earth. As he visualized it again he slowly became aware that once more he was aboard her and the stars he was seeing were on the giant wall screen.

He watched with interest as one planet after another turned a pale violet and became nearly invisible. He had grown accustomed to the crew of the ship, so paid little heed to them. Their voices were low, monotonous to his ear, never rising or speeding up or sounding indecisive. Completely expressionless, their words defied any attempt to interpret them.

"He's back," the telepath announced.

"Good. I was afraid that he might die." The navigator in charge went calmly about his duties of sighting and marking in a complex three-dimensional chart the course of the mighty ship as it ranged among the stars.

"He's recovering from his injury. He still can't receive any impulses from me," The telepath tried again and again to create a picture in the alien mind in their midst. "Futile," he said, "the differences are too great."

"Undisciplined," said the psy-

chologist who had been waiting ever since that first visit by the alien. "A disciplined mind can be reached by telepathy."

"Can you see his world?" This from the astro navigator.

"Only the same intimate scenes of home-life, his work and his immediate surroundings. He is very primitive, or perhaps merely uneducated."

"If only he knew something about astronomy." The navigator shrugged and made a notation on his chart as two more distant planets registered violet.

"The names he associates with stars are these," the telepath probed deeper, "The Dipper, North star, Mars . . . no, that is one of the planets they have colonized." A wave of incredulity emanated from him, felt by the others of the crew, but not expressed in his voice, "He doesn't know the difference between single stars, clusters, constellations, only that they appear as individual stars to him, and he thinks of them as such."

The navigator's calm voice belied the fury the others felt well out from him. "Look at his sun, perhaps that will give us a hint." They all knew the improbability of this. The telepath began droning what little Allan knew about the sun when the captain appeared through another wall screen.

He was accompanied by the ship's ethnologist, the expert who could reconstruct entire civilizations from the broken remains of a tool or an

object of art, or less if necessary. The captain and his companions made themselves comfortable near the star screen and seemed immediately engrossed in the broken lines indicating the ship's flight in the three-dimensional reproduced outer spaces.

"Is he still here?"

"Yes, sir."

"Is he aware yet that we discovered his presence among us?"

"No, sir. We have made no effort to indicate our awareness to him."

"Very good." The captain then fell silent pondering his particular problem as the ethnologist began adding to the growing list of facts that were known to Allan about Earth.

They would have a complete picture of the present and the past. As complete as the alien's mind and memory could make it. But unless they could locate his planet they might just as well go home and view space-fiction films. This exploration trip had achieved very little real success. Only fourteen planets that could be rated good with some sub-intelligent life, several hundred fair with no intelligence and only one he could conscientiously rate excellent. This mind was of an intelligent, though as yet unadvanced humanoid race. The planet it inhabited met every requirement to be rated excellent. Of this the captain was certain.

Suddenly the telepath announced, "He's gone. He became bored watching the screen. He knows nothing

about astronomy; therefore, the course loses its significance to him. He has the vague idea that we're going to a predetermined destination. The idea of an exploration, charting cruise hasn't occurred to him as yet."

"I wonder," mused the captain, "how he reconciles his conscious mind to his subconscious wandering."

The psychologist answered. "As he begins to awaken other dreams probably mingle with these memories causing them to dim at the edges, thus becoming to his mind at any rate merely another series of especially vivid well-remembered dreams. I believe much of what lies in his subconscious is dream memory rather than fact memory." The psychologist didn't smile, or indicate in any fashion the ridicule and sarcasm the others felt as he continued, "He has the memory of being always well fed. He has buried the memory of hunger so far down in his subconscious that it would take a skilled psychologist a long time to call it forth."

The telepath stirred and started to reply, then didn't. The alien's mind had been like a film, clear and easy to read. Some of the pictures had been disturbing and incomprehensible, but only through their strangeness, not because they were distorted by dream images. The psychologists never could accept anything at face value. Always probing and looking for hidden places

and meanings. Just as he did when told of the world democracy existing on Earth.

"Most likely a benign dictatorship. A world couldn't be governed by a democratic government, a small area, perhaps, but not a world." Thus spoke the psychologist. But the telepath had been inside Allan's mind, and he knew it could and did work. Not only the planet Earth, but also the colonies on Mars and Venus.

The captain was still pursuing his own line of questioning.

"Has he ever shown any feeling of fear or repulsion toward us?"

"None, he accepts us as different but not to be feared because of it."

"That's because he believes we are figments of his imagination; that he can control us by awakening."

The captain ignored this explanation advanced by the psychologist. A mind intelligent enough for dreams, could feel fear in the dreams—even a captain knew that. He was beginning to get the feeling that this Earth race might prove a formidable foe when and if found.

"Has he shown any interest in the drive?"

"He assumed we use an atomic drive. He has only the scantiest knowledge of atomics, however. His people use such a drive."

"The fact that the race has atomics is another reason we must find them." This would be the third planet using atomic energy. A young race, an unknown potential. They

did not have interstellar travel now, but one hundred fifty years ago they didn't have atomic energy and already they had reached their neighbor planets. It had taken three times as long for the captain's people to achieve the same success. The captain remembered the one other race located in his time that had atomics. They were exploring space in ever widening circles. True they hadn't made any startling advances yet in weapons, they had found decisive bombs and lethal rays and gases unnecessary. But they had learned fast. They had resisted the invaders with cunning and skill. Their bravery had never been questioned, but in the end the aggressors had won.

The captain felt no thrill of satisfaction in the thought. It was a fact, accomplished long ago. The conclusion had been delayed certainly, but it had also been inevitable. Only one race, one planet, one government could have the energy, and the right to the raw materials that made the space lanes thoroughfares. The slaves might ride on the masters' crafts, but might not own or operate their own. That was the law, and the captain was determined to uphold to the end that law.

And now this. One mind freed from its body and its Earth roaming the universe, divulging its secrets, all but the only one that mattered. How many millions of stars lit the way through space? And how many of them had their families of planets supporting life? The captain knew there was no answer, but

still he sought ways of following the alien's mind back to his body.

Allan stirred his coffee slowly, not moving his head. This was his first meal sitting up, now at its conclusion he felt too exhausted to lift his spoon from his cup. Clair gently did it for him and held the cup to his lips.

"Tired, darling?" Her voice was a caress.

"A little." A little! All he wanted was his bed under him and Clair's voice whispering him to sleep. "I don't believe I'd even need a hypo." He was startled that he had spoken the thought, but Clair nodded, understanding.

"The doctor thinks it best to put off having anything if you can. I'll read to you and see if you can sleep." They had rediscovered the joy of reading books. Real leather-bound books instead of watching the three D set, or using the story films. Allan loved to lie quiescent, listening to the quiet voice of his wife rise and fall with the words. Often the words themselves were unimportant, but there was music in listening to Clair read them. They were beautifully articulated, falling into a pattern as rhythmic as if there were unheard drums beating the time.

He tried to remember what the sound of her voice reminded him of. Then he knew. By the very difference in tone and expression he was reminded of the crew of the mile-long spaceship in his dream. He grinned to himself at the im-

probability of the dream. Everyone speaking in the same metallic tone, the monotonous flight, never varying, never having any emergency to cope with.

The noises of the hospital dimmed and became obscure and then lost entirely. All was silent again as he sped toward the quiet lonesome planet he had last visited. There he had rested gazing at the stars hanging in expanding circles over him. He had first viewed the galaxy from aboard the spaceship. Interested in the spiral shape of it he had left the ship to seek it out at closer range. Here on this tiny planet the effect was startling. If he closed out all but the brightest and largest of the stars there was ring after ring of tiny glowing diamonds hanging directly above him. How many times had he come back? He couldn't remember, but suddenly he thought about the mile-long spaceship again.

"He's back," the telepath never moved from his position, before the sky screen, nor did the astro navigator. Abruptly, however, the panorama went blank and the two moved toward the screen on the opposite wall.

"Is he coming?"

"Yes. He's curious. He thinks something is wrong."

"Good." The two stepped from the screen into a large room where a group watched a film.

The navigator and the telepath seated themselves slightly behind the rest of the assemblage. The cap-

tain had been talking, he continued as before.

"Let me know what his reactions are."

"The film interests him. The dimensional effect doesn't bother him, he appears accustomed to a form of three-dimensional films."

"Very good. Tell me the instant something strikes a responsive chord."

The film was one of their educational astronomy courses for beginners. Various stars were shown singly and in their constellations and finally in their own galaxies. Novae and super novae, planets and satellites appeared. The telepath dug deep into the alien's memory, but found only an increasing interest, no memories of any one scene. Suddenly the telepath said,

"This one he thinks he has seen before. He has seen a similar galaxy from another position, one that shows the spiral directly overhead."

The captain asked, "Has this one been visible on the screen from such a position?"

"Not in detail. Only as part of the charted course." The navigator was making notes as he answered. "There are only three fixes for this particular effect. A minor white dwarf with six satellites and two main sequence stars, satellites unknown."

The captain thought deeply. Maybe only a similar galaxy, but again maybe he was familiar with this one.

The orders were given in the same tone he had used in carrying

on the conversation. The alien had no way of knowing he was the helmsman guiding the huge ship through space.

The telepath followed the alien's mind as he gazed raptly at the ever changing film. Occasionally he reported the alien's thoughts, but nothing of importance was learned. As before, the departure of the alien was abrupt.

With the telepath's announcement, "He's gone," the film flicked off and normal activity was resumed.

Later the captain called a meeting of the psychologist, the telepath, the chief navigator and the ethnologist.

"We represent the finest minds in the universe, yet when it comes to coping with one inferior intellect, we stand helpless. He flits in and out at will, telling us nothing. We are now heading light-years out of our way on what might easily prove to be a fruitless venture, merely because you," he held the telepath in his merciless gaze, "think he recognized one of the formations." The captain's anger was a formidable thing to feel, and the rest stirred uneasily. His voice, however, was the same monotone it always was as he asked, "And did you manage to plant the seeds in his mind as suggested at our last meeting?"

"That is hard to say. I couldn't tell." The telepath turned to the psychologist for confirmation.

"He wouldn't know himself until he began feeling the desire for more

education. Even then it might be in the wrong direction. We can only wait and hope we have hit on the way to find his home planet through making him want to learn astromavigation and astronomy." Soon afterward the meeting adjourned.

Allan was back at work again, with all traces of his accident relegated to the past. His life was well-ordered and full, with no time for schooling. He told himself this over and over, to no avail. For he was still telling himself this when he filled out the registration blank at the university.

"He's here again!" The telepath had almost given up expecting the alien ever again. He kept his mind locked in the other's as he recited as though from a book. "He's completely over his injury, working again, enrolled in night classes at the school in his town. He's studying atomic engineering. He's in the engine room now getting data for something they call a thesis."

Quietly the captain rolled off a list of expletives that would have done justice to one of the rawest space hands. And just as quietly, calmly, and perhaps, stoically, he pushed the red button that began the chain reaction that would completely vaporize the mile-long ship. His last breath was spent in hoping the alien would awaken with a violent headache. He did.

THE END

THE UNBLIND WORKINGS OF CHANCE

BY ISAAC ASIMOV

The improbability of living molecules just "happening" by pure chance is a familiar argument. But Dr. Asimov presents here the cogent suggestion that throwing sevens with dice loaded with permalloy slugs, on a 50,000 gauss magnet might not properly be called a "pure chance" operation. . . .

The question before the house, folks, is exactly how much luck was involved in the development, on Earth, of life from non-living substances, and, as a corollary, what chance there is of finding life on any other Earth-like planet.

Science-fiction writers, in dealing with Earth-like planets, generally assume the presence of life—often of intelligent life. Dramatically, this is good, because it makes for interesting stories, and in the absence of definite information to the contrary, that is justification enough. However, it would be interesting to speculate as to how right—or wrong

—science-fiction writers might be in doing this.

To go about this systematically, let's first decide what—from a chemical standpoint—non-life is, and what—from a chemical standpoint—life is, and then, perhaps, we can see how non-life may turn into life.

Non-life first—and specifically the ocean. Life consists, essentially, of material dissolved—or in colloidal suspension—in water. It is just about certain then, for this and other reasons as well, that life began in the ocean.

The ocean consists, chiefly—sur-

prise, surprise—of water. Secondly, it contains dissolved ions—that is, electrically charged atoms or groups of atoms. The chief ions are sodium ion and chloride ion, but substantial quantities of potassium ion, calcium ion, magnesium ion, sulfate ion, phosphate ion and others are also present. These are all substances that exist in the ocean today and, we have every reason to believe, existed in the ocean before life began, though probably in lesser concentration then.

So far, there are no problems. Living tissues, like the ocean, consist chiefly of water, and present in tissues are the same ions that are present in the ocean and, moreover, in reasonably similar concentrations.

But the primordial ocean contained more than water and ions. It contained gases in solution, derived from the atmosphere. So does today's ocean, to be sure, but the primordial atmosphere was different from today's atmosphere and the dissolved gases in the primordial ocean were different, therefore, from those in today's ocean.

The nature of the atmosphere of the primordial Earth in the days before the coming of life was discussed last month in my article "Planets Have An Air About Them." The conclusion was that Earth's atmosphere then consisted primarily of ammonia (NH_3) and carbon dioxide (CO_2). Ammonia is extremely soluble in water and carbon dioxide is fairly soluble. Both gases would occur in quantity in the ocean.

Minor constituents of the early atmosphere would be hydrogen sulfide (H_2S), methane (CH_4) and perhaps even some hydrogen (H_2) which had not yet had time to leak away into space. Of these, hydrogen sulfide is somewhat soluble, but the other two are only slightly soluble in water. Still there is so much water in the ocean, that the total dissolved quantity of even a slightly soluble gas comes to volumes that must be measured by the thousands of cubic miles.

There we have non-life. The substances mentioned in this section are the non-living raw materials of life.

Which means I must now turn to life.

The living cell—of the human being, say—is an exceedingly complex mixture of substances, any one of which, if isolated in a test tube, is no longer alive, or at least does not possess the properties we commonly associate with life. This might lead us to believe that life is something more than a chemical or a group of chemicals—and to a certain extent, I suppose that is correct.

Yet not entirely correct. Some of the chemicals in the cell are more nearly associated with life than are some others. For instance, in the interior of the cell is a denser portion, marked off from the rest by a thin membrane. This denser portion is called the cell nucleus. It is the cell nucleus which organizes the growth and reproduction of the cell so that if we were to try to pin life

down to something smaller than the cell, it would be at the nucleus that we would have to look.

Within the nucleus there is chromatin material which, during cell division, coalesces into a number of threadlike objects called chromosomes. There is a tremendous quantity of evidence to the effect that it is these chromosomes that determine the chemical characteristics of the cell of which they form a part. During cell division, each chromosome duplicates itself meticulously so that each daughter cell gets a full set of accurate chromosomes.

It becomes reasonable to suppose that life is most closely associated with the chromosome portion of the cell. As material evidence for that, consider the sperm cell, which is just a tiny, tailed bag containing a half-set of chromosomes and nothing else. Yet not only is the sperm cell alive but it carries within it the chemicals controlling the thousands of hereditary characteristics that are transmitted from father to child. (The other half-set of chromosomes is contained in the ovum so that father and mother contribute equally to the chemical characteristics of the child.)

We can go further still. The chromosomes—on the basis of indirect, but extremely detailed and convincing, evidence—are strings of genes, each gene controlling an individual inherited characteristic. (To supply a musical metaphor, the individual gene strikes a single note; while all the genes of all the chromosomes of

an individual cell sound the complex symphony we call life.)

The gene, we think, is a single molecule; extremely complex, it is true, but still a single molecule of the type known as nucleoprotein.

And that is as far down as we can trace life within a cell.

Let's try another tack. So far we have been looking deeper and deeper into a complex cell. Suppose that instead we look for simpler and simpler cells. Would that help.

Unfortunately, simple cells don't exist. Animals that are smaller and less "advanced" than man may have fewer cells and fewer different kinds of cells and less specialized cells, but each individual cell remains just as complicated—chemically—as ever. Even the single cell of the bacterium is not simple. It is, if anything, more complicated than the cells of a human being, and contains all the different kinds of chemical substances a human cell does.

But there are objects which are subcellular in size, yet which are considered to be alive. Those objects are the viruses.

Viruses come in a variety of subcellular sizes. The larger viruses are still fairly complicated and contain a variety of chemicals, but as one considers smaller and smaller viruses, they appear to strip themselves of one type of chemical after another, hanging on, presumably, to the more essential, then, finally, only to the most essential.

The smallest viruses of all are

made up of single molecules of one particular substance—nucleoprotein.

So we reach life-at-its-simplest by two routes and come up with genes in one case and viruses in the other, and both are nucleoprotein.

Do nucleoproteins possess any properties which mark them out from other chemicals? Is there anything about them to suggest why they should be so intimately connected with what we call life?

In one respect there is. Nucleoproteins, in their natural surroundings, have the ability to reproduce themselves. The genes within the cell, for instance, can somehow cause simpler substances in the surrounding fluid to line up in such a way that atom for atom the final arrangement resembles the atom arrangement in the molecule composing the gene. This line of simpler substances is then knit together to form one huge, complicated molecule—the duplicate of the gene which served as a pattern. This is called autoreproduction and, of all known substances, only the nucleoprotein is known to possess the property.

The gene can bring about the synthesis, not only of a second molecule of itself, but also of somewhat less complicated molecules—perhaps modeled on limited portions of itself—called enzymes. These enzymes govern the chemical reactions within the cell and, in this way, dictate the cell chemistry. Each gene is responsible for the

production of a few specific types of enzymes—perhaps even of only one type of enzyme.

The virus can be looked upon as an independent gene—or group of genes—which can invade cells and run them to suit itself. It is like the cowbird which lays its eggs in the nests of other birds. The virus, within a cell, superimposes its own chemistry, by some means, upon the cellular victim. It forms its own type of enzymes and duplicates itself over and over again out of the simpler substances within the cell, and all the cell's normal functions are suspended indefinitely under the stress of the foreign demands.

The method by which a nucleoprotein multiplies itself and "grows," must be distinguished from the way in which a crystal "grows." As a solution of sodium chloride slowly evaporates, sodium chloride crystals form and increase in size. They increase in size because as sodium ions and chloride ion come out of solution, they align themselves on existing crystals according to the pattern of electrical charges on the crystal surface. There is no change in the ions in the process. They were ions in solution and they're ions in the crystal. They're bound to one another by the same forces that bound them in solution. It is just that there is order in the crystal where there was none in solution. There is *increased organization* in the crystal.

The nucleoprotein molecule, however, does not merely find more

nucleoprotein molecules in its neighborhood to add on to a conglomeration of itself. It starts with different substances altogether, much simpler than itself, and brings about the formation of another "itself."

The increase in organization involved in a nucleoprotein duplicating itself is much higher than that involved in a crystal of sodium chloride growing larger.

In fact, one might try to define the "livingness" of a substance or conglomeration of substances as a measure of the rate at which it can increase the organization of its surroundings and the level of organization it can reach.

Now, then, we can come to a conclusion. If we can deduce how a nucleoprotein molecule might have been formed from non-living material—even just one nucleoprotein molecule—then all the rest of the development of life from that single nucleoprotein becomes understandable.

To paraphrase a famous saying: Nucleoprotein is the whole of life; all else is commentary.

We've managed to define the problem in its simplest terms, now. On the side of non-life, we have a lot of water, considerable carbon dioxide and ammonia, a small quantity of hydrogen sulfide, and a bit of methane and hydrogen, plus the ions in the ocean. The atoms included in the molecules of these substances are a lot of hydrogen atoms, a considerable number of carbon

atoms and oxygen atoms, a sizable number of nitrogen atoms and a small number of sulfur atoms. Among the ions are phosphate ions which include phosphorus atoms.

On the side of life, we have nucleoprotein, the molecules of which consist of a large number of hydrogen atoms, a considerable number of carbon and oxygen atoms, a sizable number of nitrogen atoms and a small number of sulfur atoms. Also a small number of phosphorus atoms.

If we just look at the kind of atoms in non-life and in life, or even at the relative proportions of the kinds present in both cases, there isn't much difference. But when it comes to the relationship among the atoms—

On the non-life side we have small molecules made up, at the most, of five atoms apiece. On the life side we have tremendous nucleoprotein molecules made up of millions of atoms, each placed just so.

The question is, how did the atoms in these small molecules manage to place themselves just so in order that the first nucleoprotein molecule might be formed? Once one nucleoprotein molecule exists, it can guide the formation of others. But how was the *first* one formed?

Could it have been the result of the blind workings of chance? Could the atoms just happened to have bumped one another and stuck together in the right pattern—just by

chance, after a billion years of random trying?

To test the blind-chance hypothesis, let's set up the simplest possible analogy. Suppose we had marbles of six different colors and suppose we took a few million assorted marbles and threw them helter-skelter into a box. Suppose each marble were coated with a kind of cement which would make it stick firmly to any other marble it happened to touch. Having thrown them into the box, pull the whole sticking-together mess out. What are the chances that, just by luck, just by the blind workings of chance, all the colored marbles have so arranged themselves that a pattern equivalent to that of a perfect nucleoprotein is the result?

Those of you who have read my article, "Hemoglobin and the Universe," may be able to make a shrewd guess as to what the answer to that one is. For those of you who have not, I will only say that the chances are more infinitesimal than you or I can imagine. So infinitesimal, that if the known universe were crammed with nothing but people and each person performed the test twenty times a second—a hundred times a second, a thousand times, what's the difference!—for a billion years—or a trillion or a trillion trillion—the chances of any one of those humans coming up with a perfect nucleoprotein pattern at any instant in all that time is still infinitesimal.

This kind of thing was pointed out, rather triumphantly, by a man

called Lecomte du Noüy, in a book named "Human Destiny," published in 1947. His point of view was that this proved it to be completely unreasonable to suppose that life had originated by the blind workings of chance and that therefore there *must* have been some directing intelligence behind its origin.

The de Noüy argument had quite a vogue—and still has—among people who approved the conclusion and were willing to overlook flaws in the line of reasoning for the sake of that conclusion. But, alas, the flaws are there and the argument contains a demonstrable fallacy.

Let's take a simpler case and see if we can spot the fallacy.

Suppose we start with a mixture of the gases, oxygen and hydrogen. By heating them, we can cause the molecules of oxygen and hydrogen to combine with one another with explosive eagerness. The result is a substance made up of molecules consisting of both hydrogen and oxygen atoms, three atoms altogether, arranged in a V-shape.

So far, all this is true, but suppose that all this is *all* you know. Nothing else! What, then, if you start working out what the final molecule might be on the basis of the blind workings of chance. You know that the final molecule contains three atoms, including both hydrogen and oxygen. There are six kinds of combinations that fulfill that condition. Those are:

H-H-O	H-O-H	O-H-H
O-O-H	O-H-O	H-O-O

H-H-O is equivalent to O-H-H—just flip one molecule around and you have the other—and O-O-H is equivalent to H-O-O. Each can be formed in two different ways, you see, so H-H-O and O-O-H are both twice as probable as are either H-O-H or O-H-O, each of which can be formed in only one way.

If, then, oxygen atoms and hydrogen atoms combine at random to form three-atom molecules containing at least one of each, then the laws of probability state that in any number of such three-atom molecules, the most probable distribution of each variety is as follows:

H-H-O	———	1/3
O-O-H	———	1/3
H-O-H	———	1/6
O-H-O	———	1/6

Having combined oxygen and hydrogen, we ought now to test theory by observation. Suppose we're super-microscopically small and can take out, from the mass of final substance, ten individual molecules, at random, and inspect them closely.

What are the chances that *all ten* happen to be H-O-H, without a single one of the other varieties present? The chances are, 1 out of $6 \times 6 \times 6 \times 6 \times 6 \times 6 \times 6 \times 6 \times 6 \times 6$ or about 1 out of 60,000,000. (Work it out yourself, if you don't believe me.)

Suppose you picked out twenty molecules, what are the chances that

all twenty are H-O-H. The answer is 1 out of 3,600,000,000,000,000.

You are welcome to figure out the chances of picking out ten billion molecules at random and finding them all H-O-H. The chances are as infinitesimal as are those of manufacturing a nucleoprotein molecule by pure luck.

And yet— If you pick out ten billion molecules of the product of hydrogen-oxygen combination, you will find that all of them *are* H-O-H. There are *no* O-O-H, O-H-O, or H-H-O molecules included.

What's wrong then? Are the laws of probability out of kilter? Heck, no. It's the people who think they are using the laws of probability that are generally out of kilter.

I started off, you see, by assuming that any three-atom combination of hydrogen and oxygen atoms was equally probable. My entire argument was based on that. My exact words were: "If then, oxygen atoms and hydrogen atoms combine at random—"

And that's the point. We have no right to assume they combine *at random*, and, as a matter of fact, they don't. The chemical properties of the hydrogen and oxygen atoms are such that the combination H-O-H is the only one that has any reasonable probability at all, so it is the only combination formed.

The same fallacy exists in the du Noüy type of argument. Sticky marbles can stick together any old way and form any old pattern but that is no guide to the behavior of

atoms. Atoms, real atoms, can only form a limited number of combinations with one another, and of that limited number, some are more probable than others.

So one does not and must not ask: What are the chances that a nucleoprotein molecule is built up through the blind workings of chance?

One must ask: What are the chances that a nucleoprotein molecule is built up through the known laws of physics and chemistry—the very definitely unblind workings of chance?

To consider the possibilities, let's take the nucleoprotein molecule apart.

It can be done easily enough. All the really complex molecules made by living tissue are polymeric in nature; that is, they are made up of simple units, or atom-combinations, that are repeated over and over in a chain. The units are called monomers. In some cases, as in starch or in cellulose, there is only one type of unit making up the molecule. In the case of nucleoproteins—or proteins in general—the units vary.

In general, the large molecules of living tissue can be broken down to the smaller units that compose them by adding the atoms of a water molecule at the joints between the units. This is called hydrolysis. The units can recombine by splitting out the water molecules. This is called condensation.

Under the proper conditions, large

molecules can hydrolyze into smaller units, and smaller units can condense into large molecules, either way.

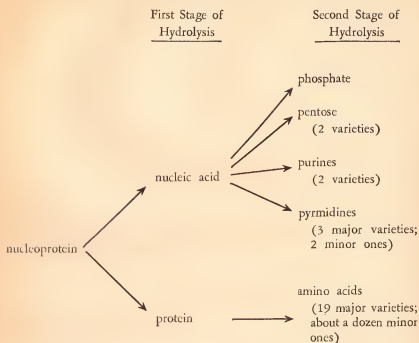
For instance, the nucleoprotein of a living virus can be hydrolyzed into two parts: one, the protein part, and the other a nucleic acid part. Neither part by itself is living or has any of the infectious characteristics of the original virus. If the two parts are mixed together and allowed to remain so for a while, a certain amount of recombination takes place. Either the number of possible ways of recombining is not very great, or else the "correct" way is more probable than others because by the "blind workings of chance," fully one per cent of the recombinations proved to be the original virus once more with all its infectious characteristics. (This was an actual experiment and, in a way, it represents the man-made creation of life out of non-life.)

Well, then, if it can be shown that the simple molecules, water, carbon dioxide, ammonia and so on can form the units out of which nucleoproteins are built up by condensation, then a large step has been taken.

What are the units which are involved? Without going into the chemistry, Table I gives the names and some idea of the variety of these units.

Of these, the phosphate group exists as such in the ocean; in quite minor amounts, alas, but enough for our purposes. It is an inorganic

Table I — Hydrolysis Products of Nucleoprotein



grouping scarcely more complicated than ammonia or carbon dioxide, so we don't have to worry about it at all. The pentoses, purines, pyrimidines and amino acids are all moderately complicated, their molecules being made up of from ten to, at most, thirty atoms apiece. And they are good, stable compounds; nothing fancy.

Let's concentrate on the amino acids. They are the most various of the groups and the most complicated, in some ways.

Suppose we mix water, ammonia,

carbon dioxide, methane, hydrogen sulfide, and hydrogen and sit down and wait for amino acids to be formed. (Bring lunch with you because you'll be waiting a long time. Amino acids won't be formed in a billion years or a trillion or a trillion trillion. Just mixing is not enough.)

You see, in general, complicated molecules have more energy content than simple molecules. For simple molecules to be built up into complicated ones, energy must be added.

In other words, water will not run uphill unless it is pumped. A

rock will fall upward only if thrown. A scattering of blocks will come together to form a house only if someone takes an interest.

In turning water, ammonia, et cetera into amino acids, the chemicals are moving uphill and that won't happen unless, somehow, they are made to do so. Or, to be more precise, energy is supplied.

Does that mean we have to abandon the unblind workings of chance after all? Not if we can find a source of energy that just happens to be hanging around the primordial earth where all this is happening.

And we can! In fact, we can find two sources.

One source of energy sufficiently concentrated to force chemical reactions to take place that wouldn't otherwise—is the lightning bolt.

The lightning bolt is with us today and it works. Our modern atmosphere contains nitrogen and oxygen. Nitrogen and oxygen can combine to form nitrogen oxides, *if* a lot of energy is supplied. The energy of a burning match isn't enough—luckily! The energy of the lightning bolt is. During the instant of flash, a small amount of nitrogen and oxygen in the air immediately surrounding it are forced together to form nitrogen oxides. These dissolve in the rain water to form nitric acid. When the nitric acid hits the soil, it combines with compounds existing there and forms nitrates.

Now the amount of nitrogen oxides formed by an individual

lightning flash is infinitesimal and the amount of nitric acid in rain water wouldn't hurt gossamer, but take it over the entire Earth and you have something. It has been estimated that about two hundred fifty thousand tons—that's tons!—of nitrates are formed by thunderstorms each day, and that this is a significant factor in maintaining soil fertility.

All right, then, the primordial lightning had no nitrogen and oxygen gas to fool with, but it did have molecules of ammonia, carbon dioxide, methane, hydrogen sulfide, hydrogen, and, of course, water vapor for playthings, and it slammed them together most energetically.

In 1952, a chemist named Miller circulated a mixture of ammonia, methane, water, and hydrogen past an electric discharge for a week, trying to duplicate primordial conditions. At the end of the week, the mixture was analyzed by paper chromatography—see my article "*Victory on Paper*"—*and amino acids were present in the mixture.* They were not the product of life-forms; the system had been carefully sterilized. They were not there to begin with; that had been checked. They had been formed from simpler compounds and energy. To be sure, only two or three of the simplest amino acids were detected, but then Miller had only waited a week and he had a good deal less than a whole atmosphere of gases to play with.

You may wonder, though, if thunderstorms and lightning-bolts existed on the primordial Earth. It seems

hard to believe they didn't, but let's suppose that they didn't. Does that knock everything to pieces?

It does not. There's a second source of energy that no one can possibly deny existed—the ultraviolet radiation of the sun. Experiments have been conducted in which simple compounds have been subjected to ultraviolet radiation and more complicated compounds have been formed.

To be sure, amino acids have not yet been reported in the ultraviolet experiments, as far as I know. One of the reasons for that is that they haven't yet included ammonia among the compounds being subjected to the energy, to my knowledge, and without the nitrogen of ammonia, amino acids can't be built. You can't have cake without flour.

In any case, the principle that ultraviolet will drive compounds uphill is definitely established.

Picture, then, the primordial ocean, as simpler compounds are converted into more complicated compounds under the lash of ultraviolet and of lightning. Amino acids, purines, pyrimidines, pentoses and many other types of compounds can be formed and as time passed they would thicken the ocean into a soup. As more and more of them were formed, they would collide with one another more and more frequently, and with energy spurring them on, they would frequently stick together.

But mind you, they would *not* stick together in random manner. There would always be a limited

number of ways in which they could stick together, sometimes not more than two or three ways.

For instance, a purine or pyrimidine could combine with a pentose and a phosphate in not more than six or eight likely ways to form what are called nucleotides.

Two nucleotides could combine with one another in not more than three likely ways, or two of the simpler amino acids could combine with one another in not more than two likely ways, to form double molecules.

A double molecule may collide and combine with another nucleotide or amino acid to form a triple molecule and so on. When enough of these units combine, the multiple amino acids have become protein and the multiple nucleotides have become nucleic acid. And then, finally, the day will come when a nucleic acid molecule and a protein molecule will collide and stick together in such a way as to form a nucleoprotein—a nucleoprotein sufficiently complicated and properly constructed to be able to autoreproduce.

And when that happens, we have life.

The mark of those chance encounters exist in the proteins and nucleic acids of today. We have learned how to determine the order of amino acids in the proteins and the order of nucleotides in nucleic acids. Where we have actually done so, the order appears quite random.

Of course, you may wonder how

amino acids and nucleotides, put together at random, can turn out to serve the needs of life so neatly. It seems too much to ask of chance. There is an intellectual trap here; we tend to put the cart before the horse.

There were all the oceans and up to a billion years as the space and time in which nucleoproteins—and other molecules—might form at random—within the limits, always, of the laws of physics and chemistry. All that space and all that time, multiplied a millionfold, would not suffice to make the formation of a *particular* nucleoprotein more than infinitesimally probable; that is, one with particular amino acids and nucleotides arranged in a particular order.

But if we are counting on the production of any old nucleoprotein with any old arrangement of parts, the time and space is more than sufficient. To be sure, every different order of parts makes for a final molecule with a different set of properties, but, so what? Whatever the final properties, those will be the raw materials of life. Some nucleoproteins might have properties that make for better survival? Those will survive.

To suppose that the properties of the chemicals within living tissue are adapted to the needs of living tissue, rather than vice versa, is what I meant by putting the cart before the horse.

It is as though we congratulated Nature on placing ears where she

did on the human head, since that was just the right distance for the ear-pieces of spectacles to fit round. Or to be grateful that the rotation of Earth has been so designed as to last exactly twenty-four hours to the second, thus making a convenient whole number to work with. Or to wonder why the sun is wasted by having it shine in the daytime when it is light anyway, rather than in the night when it is dark and we could use a little light.

But let's move on. There are two final points to consider. Can life still be created out of non-life by natural processes on Earth today? Can we suppose that life may be created out of non-life on planets other than Earth?

To answer the first question, there seem to be excellent reasons for doubting that the process can be repeated today.

First, as life advanced to the stage where photosynthesis became possible and oxygen and nitrogen replaced the ammonia and carbon dioxide of the atmosphere—see "Planets Have an Air About Them"—some of the oxygen was converted by the impinging ultraviolet into the more energetic ozone. (Ordinary oxygen molecules are made up of two oxygen atoms apiece; ozone molecules of three. Again ultraviolet light is converting the simple into the complex.)

The ozone thus formed absorbs ultraviolet strongly, with interesting consequences. In today's atmosphere,

for instance, there is a layer of ozone fifteen miles up, formed by the ultraviolet impinging on the upper atmosphere. That layer absorbs ultraviolet and prevents it from reaching the surface of the Earth. A good thing, too, because modern life, not adapted to ultraviolet light, probably could not survive if the U-V came crashing through. Nevertheless, the rays of the sun that hit our modern oceans are comparatively weak and tame and much less efficient at producing complicated molecules out of simple ones.

Again, the lightning bolt has only nitrogen, oxygen and water vapor to work on in our modern atmosphere and the nitric acid produced is not a stepping stone on the way to life. Missing are the large quantities of carbon atoms—in carbon dioxide—and hydrogen atoms—in ammonia—that were present in the primordial atmosphere. Without carbon and hydrogen, life as we know it cannot form though all Jove's thunderbolts flashed at once.

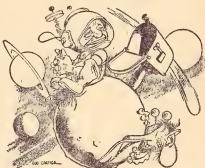
Does this sound unduly pessimistic? Are there no sources of life-yielding energy other than the sun and the storm? Is Nature so un-resourceful as to yield no third possibility, or I so unimaginative as not to see one?

Unfortunately, whether there are other sources of energy or not doesn't matter. There is another difficulty of another type that puts the final quietus on present-day formation of life from non-life.

The primordial ocean was a *dead*

ocean. Large molecules could slowly be built up in peace and thicken in concentration till the oceans were practically nothing more than a nutrient broth. Nowadays, though, any organic molecule that happened to come into existence through some fortunate collision of simpler molecules would promptly be absorbed by some minute sea-creature and either broken down for energy or incorporated into living tissue.

The modern ocean teems with life, and long before new life could possibly be formed, the raw materials out of which it might have been formed would be gobbled up voraciously by the life that already exists.



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Now what about other planets?

Proposition 1: Given a planet at a distance from its sun such as to give it a temperature in the range where water is a liquid at least part of the time, then (barring exceedingly unusual characteristics of the interstellar stuff out of which the planet is formed—either in quantity or in the abundance of the elements) then an ammonia-carbon dioxide atmosphere is inevitable. I tried to show that in my article "Planets Have an Air About Them."

Proposition 2: Given an ammonia-carbon dioxide atmosphere and a source of energy such as the ultraviolet light from the sun, life is inevitable. I try to show this in the present article.

It follows, then, if the line of deductions is reasonable, that the instinct of the science-fiction writer is correct and that life exists on any Earth-like planet. (Note, I say nothing about humanoid life, or even intelligent life. I say, simply—life. About anything beyond that, I make no predictions. Nor am I saying anything about anything resembling life which may exist on a completely different chemical basis from our own—non-nucleoprotein life, in other words—on such planets as Jupiter or Mercury. That's for another article some day, perhaps.)

The conclusion is very heartening to the science-fiction enthusiast. Is

there any way of checking on it?

There is one partial check we can make. We have a variety of worlds in the Solar System and among them is one world, other than Earth, which fulfills the conditions set above—just barely. That world is Mars. (Venus might be another, but we know practically nothing about it.)

Mars is almost too small to suit, but it manages to retain just a bit of atmosphere and water. It is almost too cold to suit, but water just manages to be liquid part of the time. It is almost too far from the sun to suit, but it picks up some ultraviolet from the sun—less than half of what the primordial Earth did.

So Mars is a severe test of our line of reasoning. A cold, nearly dry, nearly airless world— We could excuse ourselves if it failed.

But let's see, is there life on Mars?

Despite all the odds against it, despite the poorness of the planet, the answer seems to be: probably, yes.

At least, the green areas on Mars seem to signify some kind of vegetation. The vegetation might be very primitive and undiversified, nothing like the teeming life of Earth, but it would be *life*.

And if Mars can do it, then it is my belief that any Earth-like planet can do it with one arm tied behind its back.

THE END



THE LOST VEGAN

The con man gave all the right responses . . . for the wrong reasons. Whether he benefited by it, though, is somewhat of a question. . . .

BY E. J. MCKENZIE, JR.

Illustrated by van Dongen

WANTED: Mahatma P. McGee—alias John Weatherby, Olin R. Van Cleft Jr., Chauncy Cartwright III. Confidence man extraordinary. Wanted for questioning about two hundred thousand dollar swindle. Many arrests, no convictions. A very smooth confidence man—former actor. Specializes in bilking middle-aged women. Expert card and dice mechanic. Will work card and crap games to get working capital for further confidence swindles. Description: . . .

Federation Constitution: Volume 58: Barbarians: . . . Class 4E . . . These entities have . . . intelligence, adaptability, cunning . . . they are capable of absorbing Federation culture, however . . . dangerous at

their present level of development . . . Immigration quota: Zero. Probable interval to Federation admission: One hundred and seventy-five . . . Present Federation Contacts: Survival Stores and Survivor Registration field units . . .

CHARTER: Federation Survival Stores: Introductory History: Chapter Six, paragraph two . . . and so since superstition, magic, and religion seem to be universe-wide in existence, form, and appeal; and since religion is usually too well established for the average castaway or survivor to take advantage of, magic is recommended as the best way for a survivor to make a living while waiting for a rescue ship. With this in mind the Federation has set up survival stores on each barbarian planet. These stores stock appropriate equipment so that survivors can . . .

October 18, 1959

To: The Future Magic Co.
New York, New York
Gentlemen:

I saw your advertisement in *Hoki Poci*, magic magazine, and I am enclosing twenty-five bucks to cover the cost of one of your Miracle Marble Movers. It sounds like just the thing I need for my magic act. But, like your advertisement said, it better not have any wires attached to make it work, because if it does, I don't want it and you can send my money back. Another thing, too: in my act I don't use marbles, I use

little cubes. If the Miracle Marble Mover will move marbles it ought to move cubes, too. If it can't move cubes, send my money back.

Please hurry my order because I am marooned in this burg and I want to get my profitable act going again.

Yours,
Mahatma McGee
Room 7, Hotel Central
Bell City, Oklahoma

October 30, 1959

To: Mr. Mahatma McGee
Dear Sir:

We are in receipt of your letter of the 18 October, and it appears as if you have forgotten to include your system code number. Until we are in receipt of this number we will not be able to fill your order properly.

Sincerely yours,
Marcus X. Tageer,
President

November 6, 1959

To: The Future Magic Co.
New York, New York
Gentlemen:

I don't know what me having a system has got to do with it, because I usually don't use one. The last system I ever used was at Las Vegas, and it cost me a quick 5 C note.

Please hurry up with the gimmick.

Yours,
Mahatma McGee
Room 7, Hotel Central
Bell City, Oklahoma

November 8, 1959

To: Mr. Mahatma McGee

Dear Sir:

There is no necessity for you to clothe your answers to us with slang references. Just mentioning in an unambiguous way that you are from the system Vega C5 would have been enough to identify you.

We have aided other Vegan castaways in the past and found them to be very co-operative. Speaking the vernacular of this world is a commendable and desirable thing, however, in your future communications with us it is hoped that you will use the more formal usage since some of our personnel here have had little or no contact with the entities of this world on a social basis.

We would not have known that you were from the Federation except that you told us that you were marooned. Rule 15 of the Survival Manual clearly states the necessity of identifying yourself correctly to the Survival Stores stations.

As you know we are set up solely to furnish survival equipment to marooned Federation citizens. You also know that such equipment is to be used only to make a living until arrangements are made to return you to your home. We have notified the Registration unit and they are making arrangements for a ship.

A word of warning: In the future vague or wrong answers to our magic advertisements, or failure to identify yourself by means of your Federation system number will only result in your receiving legitimate Earth

magic equipment which depends for its effect on manual skill and optical illusion and which requires great and arduous practice.

We are happy to enclose the latest model of the Psi mover and we hope you have a successful act. We are also returning your money as this survival equipment is furnished free to Federation citizens.

Sincerely yours,

Marcus X. Tageer,
President

P.S. A word of warning. Constant practice is necessary in order that you may gain the skill to make the effect seem natural. It is advised that you do not attempt to incorporate this act into your performance until you have thoroughly practiced this effect.

November 11, 1959

To: The Future Magic Co.

New York, New York

Gentlemen:

It is a pleasure to do business with an outfit that not only sends my money back but also sends the gimmick. I got the marble mover in the mail this morning, but you must have forgotten to enclose the instructions because I didn't find any in the box. Please rush the instructions because I just found out that this burg is not as dead as it seems. There are arrangements being made for a big show of which I intend to be a star performer. It all depends on whether I get the gimmick working in time or not. I really need the gimmick because the hand I used to

use in this kind of show, accidentally got stepped on and I can't do the act as good as I used to.

Yours,
Mahatma McGee
Room 7, Hotel Central
Bell City, Oklahoma

November 14, 1959

To: Mr. Mahatma McGee

Dear Sir:

It was not felt that instructions in the use of the Psi-amplifier were necessary. As you know apparatus of this kind is on the restricted usage list and only low-powered units of the Miracle Marble Mover type are allowed on Class 4E planets, and then they are only to be used by survivors who are acting as professional magicians.

However, since you are from Vega, maybe you do need a few instructions. Simply use the unit as the people of this world use their hearing aids. The similarity in appearance between our unit and a human hearing aid is not accidental. Place the amplifier in the breast pocket and insert the attached ear plug in one ear. When the switch is activated by a deep breath, think of the marble or cube and it will move the way you will it to. Marbles because of their low-frictional resistance, and their smooth flow when moving are better for magic effects because their control is never apparent no matter how inadequate the thinker's control. Cubes can be controlled to a certain extent but it is better to start them rolling first to

overcome their at-rest inertia. When controlling the cubes while rolling them, constant practice will be necessary to insure free smooth-flowing action. Quick starts or stops or angular flips should be avoided or your audience will realize your inadequacies as a magician and you may have trouble getting another audience. Remember constant practice.

Sincerely yours,
Marcus X. Tageer,
President

November 25, 1959

To: The Future Magic Co.

New York, New York

Gentlemen:

What do I have to do to get a broken Miracle Marble Mover fixed? How much is it and where do I send it?

Yours,
Mahatma McGee
Room 7, Hotel Central
Bell City, Oklahoma

November 28, 1959

To: Mr. Mahatma McGee

Dear Sir:

We cannot understand how your Psi unit became inoperative. They are built to last a generation of Zoarks. The case is practically unbreakable. However there are, we suppose, some unforeseen circumstances which could cause the unit to become inoperative, and if such is the case please do not attempt to have any Earth mechanic fix it. Send

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the unit back to us and we will service it.

Sincerely yours,
Marcus X. Tageer,
President

November 30, 1959

To: The Future Magic Co.
New York, New York
Gentlemen:

Enclosed you will find the Miracle Marble Mover, and I'll tell you right now that the circumstances were unforeseeable, because if I could have seen what was going to happen, I wouldn't have put on my act. It is the Miracle Marble Mover's own fault that it got broken, because when I started my act the cubes didn't behave just natural like, what with stopping suddenly and starting up again and slowing up and jumping, those snake eyes looked like they were on a real live rattler. From this you can gather that the big show didn't go over so good and so I am still marooned here. Please fix the gimmick as soon as you can because I need it and will practice till I get better with it before I try to use it in my act again.

Don't send the gimmick to my old address because after the accident that broke the Marble Mover, I had to move to another city where the audiences are not quite so prejudiced against my type of act.

Yours,
Mahatma McGee
Apt. 5,
1989 Main St.
Cincinnati, Ohio

December 5, 1959

To: Mr. Mahatma McGee

Dear Sir:

We received the damaged unit that you forwarded for repair. The unit is beyond repair and so we will have to send you a new unit. Since the nature of the accident which destroyed the unit may be a serious thing if repeated it is suggested that you wear the enclosed laminated Sterko vest. The vest carries a breast pocket in which to hold the unit.

We would like to warn you that the event that you call an accident was not what it would seem to be. You probably haven't been here long enough to realize that these human beings use archaic weapons which expel little metallic pellets at great speed from a tube by means of expanding gases. These pellets are extremely dangerous. Don't forget you are mingling with barbarians who do not have a humane weapon like our well-known stun gun. While recovery from a stun gun hit is a usual thing, recovery from a pellet hit is problematic.

Sincerely yours,
Marcus X. Tageer,
President

December 9, 1959

To: The Future Magic Co.
New York, New York
Gentlemen:

I want to say that it is an unusual pleasure to do business with a company like yours. That accident-proof vest you sent with the gimmick is just what I needed, especially now

because I just heard about a show that is going on in Chicago, and I am going to try out my new act there. Those Chicago audiences are the toughest that any working magician like myself have to face.

I've been practicing a lot with the gimmick and I have it down pretty good. I only make a mistake once in a while. I hope I don't make a mistake in this big Chicago show because if I do I'll really need that accident-proof vest.

Yours,
Mahatma McGee
Apt. 5,
1989 Main St.
Cincinnati, Ohio

December 15, 1959

To: The Future Magic Co.
New York, New York

Dear Sir:

Recently in our city we found the body of a man. He had been knifed and the body mutilated beyond recognition. We have been unable to identify him from his personal effects and our only lead as to his identity seems to be the hearing aid, sold by your company, which we found on the body.

We were unable to find any serial numbers on the case so we are forwarding the unit itself in the hope that you can identify it and its owner.

Thanking you in advance.
Homicide Dept.
Chicago Police Dept.
Chicago, Illinois

To: Survivor Registration Squad
Via Emergency Network

A castaway, originally from Vega C5 who has been operating as a magician while awaiting transportation home, was killed in Chicago. It is suggested that you act fast since his body is in the hands of the local police, and an autopsy would result in undesirable publicity if his Vegan anatomy is discovered.

The Vegan was using a Psi unit which was forwarded to us by the police. This was the only item of Federation equipment he had in his possession so do not waste time searching for his personal effects.

Signed Tageer, FSS, USA

From: The Survivor Registration Squad

To: Survival Stores USA

Body of Vegan recovered. Will be shipped on the next flight under registration number E-128.

December 23, 1959

To: Homicide Dept.
Chicago Police Dept.
Chicago, Illinois

Sirs:

All business done with the man who owned the hearing aid, was done through the mail, to a post office box number. We are sorry we can not help you.

Yours,
Marcus X. Tageer,
President

December 28, 1959

To: The Future Magic Co.

New York, New York

Dear Sir:

Body identified and claimed by relatives. Thanks for your co-operation.

Homicide Dept.

Chicago Police Dept.

Chicago, Illinois

To: Survival Stores, Earth Div.

USA Dept.

From: Chief of Federation

Survivor Bureau

Via: Interworld Message Center

Dear Tageer:

You fatheaded, irresponsible nincompoop! Maybe a tour on Centaurus "F" among the easily identifiable Flying Spiders is in order.

As you can see I am using the previously agreed upon emergency code in sending this letter. Burn this immediately after you finish reading it for if it falls into the wrong hands, we will both be back in the Frontier Corps.

What has happened you ask? Nothing much, except that there is now an Earth type human running around the Federation capital. This human is the same one you shipped to us under registration number E-128. Number 128 was not a Vegan. I don't know how this mistake was made. This would be one of the jobs that your usually sloppy crew would excel on. They did a good job of preservation and we were able to reactivate his brain in

one of the mindless bodies our biologists have been growing in their so far unsuccessful attempts at artificial life. As luck would have it this reactivation is successful. Ninety-nine times out of a hundred the reactivations only last a few hours. This one happens to be permanent.

It was only after educational tests were begun on him to acquaint him with his new body that we noticed the alien psychology of his reactions. We then examined his former remains and found to our horror the body was human.

I have sworn the doctor and the technician to secrecy and the threat of Frontier duty added to their determination to forget the whole matter. We are trying to educate this Earth human so that he will not give us away, but he reacts very strangely. I get the impression that we are the ones who are being studied. Already he acts so much like the doctor that he could masquerade successfully in any social function as a first-class citizen. It is very disconcerting. I sometimes find myself accepting him as an equal. Are all Earth type humans so adaptable?

In any case do not, I implore you, *do not* mention or even so much as hint at this matter in any future communications. We are finished if word gets out. I will keep you informed on any later developments in our attempt to integrate this Earthman.

Yours as always,

Arre Panfoua

THE END

THE DAWNING LIGHT

Second of Three Parts. Standard Operating Procedure for any discontented minority seeking to change an established system is, of course, to arrange to make a majority discontented. That, Kris peKym Yorgen and his friends were most efficiently achieving. But they didn't know why. . . .

BY ROBERT RANDALL

Illustrated by van Dangen



SYNOPSIS

During the four thousand years of its recorded history, the people of the planet of Nidor had known only peace. Ruling the one-continent world from the Holy City of Gelusar, the Elders of the Sixteen Clans, backed by a firm priesthood, had led the people in the Way of their Ancestors according to the Law of the Great Light.

And then the Earthmen had come. Unlike the down-covered Nidorians, these strangers were relatively hairless except for the odd tufts that covered their heads and chins. They came from the eternally-clouded sky, claiming to be emissaries of the Great Light Himself—whom they refer to as a "blue-white star." With the consent of the Elders, the Earthmen established the Bel-rogas School of Divine Law and began to teach the Nidorian youth—only a few of which could pass the rigorous entrance requirements.

One of the earliest Bel-rogas graduates was KIV peGANZ BRAJJYD, who unwittingly touched off Nidor's first economic crisis with his discovery of a new method for killing the hugl, a small, insectlike creature which periodically devastated the peych-bean, the staple crop of Nidor. Kiv's process was the first significant change in the Nidorian way of doing things.

Two generations later, Kiv had become an Elder of the Council. His grandson, NORVIS peRAHN BRAJJYD, invented a growth hor-

mone which would double the per-acre yield of the peych-bean crop. The invention, however, was stolen from Norvis by SMITH, the Earthman in charge of the School. The credit was given to another student, while Norvis was summarily dismissed.

After narrowly escaping death from stoning for blasphemy, Norvis fled from Gelusar, changing his name to NORVIS peKRIN DMORNO to leave the impression that Norvis peRahn was actually dead.

Deeming it unjust that only the farms of the Elders should have the new growth hormone, Norvis, with the aid of a priest-hating old sea captain named DEL peFENN VYLESS, secretly made the hormone and distributed it to farmers all over Nidor.

The result was an economic collapse that took fourteen years to straighten out. Deluged by a surfeit of food and fiber, which had become worthless in its plenty, and plagued by the excess of animal life which resulted, Nidor fell into the Great Depression. An unsuspected consequence of the hormone's use was to deplete the soil the following season—famine followed over-production.

At this crisis-point, Del swung into action, forming the Merchants' Party, an organization which he headed and of which Norvis was secretary. By applying pressure on the Council of Elders, the Party forced through corrective agricultural and economic measures which re-

stored Nidor's balance to a certain extent.

But Nidorians were too used to stability. After the upheaval died down, Norvis and Del find that the Party no longer had much popular support, and, while Del won't admit it, it is believed that Del's fiery anti-priesthood tirades have cost them much popular sympathy. Norvis, hating the Earthmen for what they have done to him personally, and for what they have done to Nidor, still maintains his burning desire to drive the Earthmen off the planet.

Affairs are now at a crisis-point for the Merchants' Party, which no longer has the money to put through their program. In desperation, the leaders of the Party come together to work out a plan.

They are, aside from Del and Norvis: KRIS peKYM YORGEN, the Party's strong man, a tall, broad-shouldered, handsome young man, who, having been reared by Norvis since he was eight, also had an overwhelming hatred for the Earthmen; MARJA geDEL VYLESS, daughter of Del, a keenly intelligent girl of determined personality; and GANZ peDEL VYLESS, her brother, Del's only son.

The conspirators are seeking something which will result in panic on Nidor—something which could be blamed on the Earthmen. Norvis admits he has thought of several plans, but that the Party lacks the money to carry them out. Marja, cutting to the heart of the situation, suggests the appallingly bold stroke

of robbing the Bank of the Province of Dimay and blaming it on the Earthmen. Norvis and the others approve, in Del's absence, and Kris peKym sails the Party ship, the *Krand*, to the seaport of Tammulcor, and there proceeds to rob the Bank. He carries the crime off with ease, since no Nidorian Bank had ever been robbed and no precautions against such an occurrence were thought necessary.

The trick comes off as planned. Kris caches the Bank funds—some eight million weights in cobalt—on the offshore Bronze Islands, and returns to the Vashcor headquarters of the Party, where he learns that the entire province is in an uproar. With the metal backing for its paper money gone, Dimay's scrip becomes worthless. And, to make matters worse, Elder Grandfather Kiv peGanz Brajjyd, head of the Council, has announced his refusal to replace the cobalt.

Kiv had been faced with a unique problem. He had received an anonymous note informing him that if the coin were replaced the robbers would dump the stolen metal back on the market, thus reducing the value of all Nidorian money. Kiv did not, of course, suspect that the note had been sent by his grandson, Norvis, whom he believed to be dead. Confronted with this prospect, Kiv refused to allow the bullion reserves to be minted.

The second part of the plan now remains to be carried out. Kris peKym goes overland to Tammulcor,

accompanied by his devoted First Officer, a Bronze Islander named DRAN peDRAN GORMEK. Kris sets up an office, and, using the cash reserves of the Party, begins to build up the value of Dimay scrip again by offering paper from the Bank of Pelvasb, buying the Dimay money at half its face value. Within a short time, he gains control over Dimay's economy; the value of the money fluctuates at his whim. People become aware of his power.

With Tammulcor in his grasp, Kris can begin his next bold stroke against the Earthmen. He invites a group of merchants to his office and tells them that Nidor's calamities are really the doing of the Earthmen, and when he sees them sympathetic to his approach, he begins to sketch out a tentative plan of attack that will result in the downfall of the Earthmen. He is painfully aware, all this time, that as a Party underling he has no right to be furthering plans of his own, and that Del, if he knew, would oppose him solidly.

As he speaks to the merchants, Kris is interrupted by a sudden knocking at the office door. It is Secretary Norvis, looking travel-stained and weary.

"What's going on, Norvis?" Kris asks. "Why are you here?"

Norvis peKrin's face becomes bleak. "Leader Del peFenn was murdered two days ago. Shot from ambush by a rifle. We don't know who did it."

Kris stared at the smaller man almost without seeing him, as the meaning of his words began to filter through his mind.

"Del is dead?"

Norvis nodded. "He was killed in the street, right outside the Headquarters. He was about to enter the building when someone shot him down. I saw the whole thing from my window."

"You know who did it?"

"Couldn't see," Norvis said, shrugging. "I have some ideas, but—" He paused. "Del was getting awfully fiery about overthrowing the Elders, and I knew it wouldn't be long before someone tried to silence him."

"Nasty situation," Kris said, almost to himself. He glanced back into the room where his eight merchants were sitting waiting for him. "Look—I've got eight fine, dues-paying members of the Party in there. They don't know that they've been in the presence of their new Leader all morning."

Norvis frowned, then nodded. "You are the new Leader, of course, now that Del's dead. You sure you can do it? It's a big job, Kris—and getting bigger."

"Don't worry about that. I'll be able to handle it." He rubbed his chin thoughtfully with the back of his hand. "It seems to me, though, that you should have sent a messen-

ger instead of coming yourself. Who's handling the Party in Vashcor? You didn't leave young Ganz in charge, did you?"

"No. Ganz and Marja came with me; I figured that if anyone were out after Del, they might try for his children, too." Rather self-consciously, Norvis brushed dust from his forearms. "No; I left the Party in Captain Bas peNodra's hands. He's a nobody, but he can hold them together if there's stronger leadership from the top. I thought maybe you'd rather keep up the work here than go back to Vashcor."

"You were right," Kris said decisively. "There's more work to be done here in Tammulcor in a week than there is in Vashcor in a year. I think we'll set up our new headquarters here—make this the center of the Merchants' Party."

"But there's time for that later. Here's some money; you take Ganz and Marja down to my hotel. Dran peDran's there; he'll take care of you. We'll talk this out when there's some free time. Right now, I've got business to attend to."

"Fine." Norvis nodded and left. Kris remained at the door for a moment, a half smile on his face. Del peFenn Vyless was dead. How nice! How timely!

It was too bad about Del, of course—but the old seaman had been asking for trouble all along, and anyone who antagonized people the way he did had better be prepared for a short life. And now Del was out of the way. That left Kris free

to put his own plans in operation without fear of conflict from the gruff old captain.

Kris turned and went back into his office. The conversation the eight merchants had been engaged in died away immediately. They looked up at him, and he surveyed them with icy eyes—eyes that showed neither friendliness nor hatred, only an expectancy of obedience.

He glanced at each of them in turn. "You are all members of the Merchants' Party, aren't you?"

The men looked at each other briefly, and then, as though he were afraid something would happen to him, the baker said softly: "Yes. We are."

Kris peKym's expression didn't change. "Then give your alms to the honor of Del peFenn Vyless, who has been murdered by our enemies."

"What?" Nibro peDom was out of his chair instantly. "How do you know that?"

"The man at the door just now was Norvis peKrin Dmorno," Kris said. "He bore the news from Vashcor."

"What will happen to the Party now?" Nibro asked nervously. "Now that Del is gone, who—"

"From now on, you will follow me," Kris said coldly.

"You? But who are you?"

"Kris peKym Yorgen, and that's all that need concern you. Del chose me his successor before his death."

"But how do *we* know that?" the baker asked truculently.

Kris frowned. "Because I tell you so! Do you think I'd lie?"

Nibro peDom seemed to give ground. "But—what are your qualifications? You're not a merchant. What do you know of our special problems? As far as *we* know, you're just a traveling moneychanger!"

Kris stepped forward and placed a forefinger on the baker's chest. "Nibro peDom, be assured that I know the merchants' problems intimately. I also know the problems of the seamen, the bankers, the farmers, and the priests. I have their interests at heart—as well as those of the Great Light. The Party is in good hands, Nibro peDom." He folded his arms. "And now, let's get down to business, shall we? I called you here for a reason, and we've already wasted too much time."

The meeting took nearly an hour. By the time it was over, Kris had obtained several definite commitments. Mentally, he checked off the things he would have to remember—there were things to be delivered and things to be set aside and stored.

"Let's run through it again. Drang peBroz, two thousand psych-knives."

The merchant nodded. "Nearly three feet long, heavier and wider in blade than normal, with a special thong to loop around the wrist. A very odd psych-knife, Kris peKym."

"That's not for you to worry over," Kris said.

Quickly, he reviewed the contribu-

tions each merchant was to make. "All right," he said finally. "Is everything understood?"

"All but one point," said Kresh peBor Dmorno, a pale-skinned wine-merchant. "What of the money?"

Kris looked at him steadily for a moment, then said: "If you can't give your share, why are you here?"

Nibro peDom, the baker, glared Kresh peBor down. "We will give, Kris peKym," he said.

"Good. Don't worry about going broke; there'll be money to spare. You may not make an immediate profit, but the reward will be greater when the Earthmen are gone. Got that?"

They nodded. Kris smiled satisfiedly; he was beginning to make things fall in line. The meeting was closed with handshaking all around. The merchants filed out, while Kris remained, jotting down a few notes on what had taken place.

A good day's work, he thought. And Del dead. We're moving in the right direction at last.

He locked the door of his office, pocketed the key gayly, and trotted down the stairs, in a hurry now to return to the hotel.

It was late at night, Kris saw, when he emerged into the street. The air was filled with the falling night-rain which splattered on the pavement and dribbled from the darkened roofs of the buildings into the street below.

And for the twentieth time in as

many days, Kris heard footsteps behind him.

Every damn night! he thought. *Why?*

It had been going on far too long, and it was irritating Kris to have a more-or-less constant shadow. So far, nothing had been attempted. Kris had managed to catch a glimpse of the man now and then, but whoever it was had never been close enough to be a danger. To make sure that no trap was being set, Kris had taken a different route home each night. He hadn't been attacked yet—but he didn't like the idea of being followed.

It would have been a waste of time to attempt to elude the pursuer; the man, whoever he was, obviously knew where Kris lived and where he worked. To waste his energy every night trying to get away from the shadowy figure would be just that—a waste of energy. So Kris had simply kept his eyes and ears ready, waiting for whatever might happen.

This night, the footsteps sounded closer than they had been. Kris kept his ears cocked. The city was dark; the wind had whipped up and blown out many of the street lamps.

He passed a darkened alleyway, and, quite suddenly, three men came charging out toward him. They said nothing, and it was obvious that they intended to kill to get the money Kris was carrying.

Kris went for his gun. He jerked it out of his belt and leveled it at the first of the oncoming attackers. There was a horrendous roar and a

great belch of smoke and flame. The man paused, startled, but Kris could see that he hadn't been hit.

He came on again, as Kris thumbed back the hammer for a second shot. There was another blast, and this time the first man dropped, almost at Kris peKym's feet. The other two were still coming; Kris had to make both of his next shots count. Otherwise—

Suddenly, a third figure appeared out of the wet gloom, coming up behind the attackers, a huge psych-knife swinging in his hand. The blade slammed home twice, and the two remaining thugs were lying dead in the street.

Kris kept his pistol leveled at the newcomer.

"Don't shoot that thing, Ancient One!" said a half-frightened, hoarse voice. "It's me; Bor pePrannt Hebylla!"

It was the scar-faced man who had attempted to hold him up when he had first come to Tammulcor. He stepped nearer, his psych-knife lowered. "Did they hurt you, Ancient one?"

"No," said Kris. "You came along just in time."

"I did my best, Ancient One."

Kris shoved his pistol back into his belt. There were noises up and down the street, now; people were peeping cautiously out of their windows, wondering what the two bursts of noise had meant.

Kris jerked his head in the direction of his hotel. "Come along; no use waiting for the Peacemen."

Bor pePrannt shoved his knife into his belt and fell into step.

"Why didn't you and your brother come back to my office that day?" Kris asked.

"Why didn't we come back? Well . . . to tell the truth, Ancient One, we didn't know what to expect. We argued about it, my brother and I, until it was well after the Hour of Second Prayer. When we realized it was too late—well, it was too late.

"My brother got aboard a ship, so he gave me the money you gave him. He went to Gycor—there's work there."

"And you?"

"Oh . . . well, I've been getting on. Odd jobs here and there in the daytime."

Like a handful of pyramid dice, everything suddenly fell into place. Kris stopped and looked at his rescuer. "Hoy! Is it *you* who's been following me around at night?"

"Why, sure, Ancient One. I wouldn't want you to get hurt just because my brother and I argued that morning."

"Great Light!" Kris said, trying to keep from grinning. "Come along, Bor pePrannt. You have a job—permanently."

They arrived at the hotel without further incident. Kris and Bor pePrannt climbed the stairway and strode down the hall to the suite which Dran and Kris occupied. Kris reached for the handle of the door and started to pull when the door

swung open unexpectedly. Kris stepped back and blinked.

Marja geDel was standing there, looking almost shamefully beautiful in view of what had happened to her father. Her deep, wide eyes held a sparkle, and beneath her vest, her body seemed incredibly alive and exciting. Her long legs seemed to shine in the lamplight that poured from the room.

"Kris!" Her smile was radiant. "It's good you're here; we've been discussing everything, but we couldn't arrive at any decisions without you." Then her eyes narrowed a little as she saw the hulking figure of Bor in the dimness behind Kris. "Who's that, Kris?"

Kris stepped into the room, with Bor following him. "Bor—step out and introduce yourself."

The scarfaced man smiled hesitantly and said: "I am Bor pePrannt Hebylla, old ones."

Briefly and concisely, Kris explained to Marja, Ganz, Norvis, and Dran what had happened and how he had come to meet the broad-shouldered longshoreman.

Dran peDran, who had been sitting on a chair against the far wall, stood up with a wide smile and walked over to grasp Bor's hand. "We is needing good men with a psych-knife. How is you learn to handle one? You doesn't look like a farmer."

Bor grinned lopsidedly. "I'm not. I've been a seaman, but I couldn't keep from getting seasick; I tried being a Peaceman once, but I was

let out because I didn't attend prayers at the right time. So I took up longshoring."

Kris looked at the two men. Here was his nucleus, he told himself. Here were the prototypes of the kind of men he wanted.

He turned to Norvis, who was sitting cross-legged on the bed. "Now let's get straight what happened in Vashcor. Exactly what happened to Del?"

Norvis didn't get a chance to answer. Young Ganz, standing near the bed, said: "Someone shot him while he was going into his office! Someone in the hire of the priesthood!"

Kris looked at the boy. "I didn't ask you, youngster. I asked Secretary Norvis."

Ganz subsided, and Norvis said: "It happened just about as Ganz said. Del was walking toward the office. Someone fired a rifle at him; the copper slug went right through his head."

Kris rubbed his knuckles over his jawline. "It sounds as though the priests might have been partly responsible. I doubt that an ordained Grandfather would have done or even condoned any such thing, but, considering Del's attitude, some young hotheaded acolyte might have done it. After all, Del wasn't exactly friendly toward them; the Party lost a lot of backers because of his policies. They weren't too well calculated to win the approval of the people."



Ganz peDel bristled instantly. "If you mean he went after the dirty priesthood too hard, you're wrong. It isn't possible to go after those old mothbags too hard. And when I catch up with the Elder who shot Del—"

"Oh?" Kris interrupted. "Was it an Elder who assassinated your father?"

"Well," the young man said defensively, "that's what everyone's saying. And I don't see why not. It's logical, isn't it?"

"Of course," Kris agreed. "But logic doesn't always hold together in times like these. Words lose their meaning; friends become enemies. Policies change."

Norvis, who had, as yet, said nothing, finally asked: "Are there going to be changes in our policy now?"

"Damned right there are!" Kris turned on the Secretary fiercely. "Look, Norvis, I've felt for a long time that we were going about things the wrong way. Well, here's my opportunity to do things the *right* way. Our first step is to win back the people Del alienated—the farmers, the majority of the masses of Gelusar, even the priests themselves."

"The priests?" asked Ganz peDel. "What do you want *them* for?"

Kris folded his arms. "Because the priests help to hold this world together. Because they *belong* on Nidor. Because they follow the Great Light."

"Is we going to have to work with the Elder Grandfathers?" Dran

asked. "I doesn't believe I trusts them."

"It isn't a matter of trust," said Kris. "It's necessity." He leaned forward. "What Del and the rest of you forgot is who the real enemies are—the enemies I plan to channel my attack against."

"You mean the Earthmen?" Marja asked.

"Of course the Earthmen! *They're* the devils who've been causing our troubles—and they're the ones whom we must fight! Not the Elders, I tell you."

He glanced around, saw general agreement on their faces. "Any questions?"

No one spoke. "Good. That's official policy of our Party from now on, Norvis, you can take that down."

"Does you has anything definite in mind?" Dran asked.

Kris smiled slowly as he prepared to deliver the words he had nursed in his mind so long. "Yes," he said. "Yes, I know what the first objective is."

He stared at the five faces before him. "We must destroy the School," he said slowly. "We must wipe out Bel-rogas completely, so that not even a memory remains!"

"You'll need backing for that," Norvis said evenly.

"I'll get it," Kris told him flatly. "By the time I'm through, I'll have every man on Nidor behind me."

"What about the women?" Norvis asked.

"What about them?" Kris had to

admit to himself that he didn't quite see what the Secretary was driving at. "Women can't fight; they have nothing to do with it."

Marja frowned, but said nothing, while Norvis explained.

"I know they can't; I agree with you. Women can't fight. So what do they do when faced with an emergency they can't handle physically? They pray, Kris—they *pray*. And a wife has a great deal to say about what her husband does, whether you realize it or not. Is a woman going to allow her husband to fight the very thing she pins all her hopes, her strength, her very *life* on?"

Kris chewed at his lip for a moment, then nodded. "You're right. That's probably part of the reason Del didn't succeed. He attacked the priests—the same priests who were such solace to the wives and daughters of the very men Del wanted to win over." His eyes narrowed in thought. "That means we'll have to change the women's views, too. But how?"

"I think I know," Marja said suddenly. Kris turned his head to look at her.

"Go on," he said.

"Well, look. As you said, the women depend on their faith in the Great Light to support them when their physical strength can't help them. If we can show them that the Earthmen have alienated the Great Light, we'll have them on our side. After all, the Earthmen have only

been around for six Cycles of years—the Great Light has been watching over us for untold thousands of Cycles."

Kris glanced at Norvis. "What do you think?"

"I agree," Norvis said emphatically. "If we can convince the people that the Earthmen are devils from the Outer Darkness, and at the same time convince them that we are really on the side of the priests and the Great Light, we'll have them in the palms of our hands."

Kris turned back to Marja. "Very well, then. Your job will be to convince the women. I think it's a job that only a woman could do. Have you any ideas on how to go about it?"

"Yes," Marja said proudly. "I'll go into the temples and the market places and just talk. Gossip—no more. I'll tell them about the Party and Kris peKym; I'll suggest that the Earthmen—not the priests—have caused all our trouble. I'll put it to them that the priests need our help—the help of the Party—to drive the demons out. I'll start bad rumors spreading against them."

"What about the School?" Norvis interrupted.

"That, too," Marja said emphatically. "Have you noticed how many promising students have been expelled from the Bel-rogas School of Divine Law lately?"

Norvis grinned wryly. "Yes. So?"

"Very well. Those students have mothers and sisters. Do you know why they were expelled? I'll tell

you: They were *too* smart! The Earthmen knew that they were just about to discover that Earthmen were demons—or at least they were on the right track. So they were unjustly expelled."

The others all smiled.

"Great!" Kris said. "Great! That's the right attack!" Then he paused and looked at her carefully. "But you'd better do something about yourself. You don't look like a common farm woman."

"Oh, I'm not," Marja said, suddenly looking very demure. "My father is a priest—a Grandfather in Sugon. I'm in Tammulcor visiting relatives."

Norvis burst into laughter. "Girl, you're perfect! Absolutely perfect."

Kris chuckled in agreement. "Right. All of her father's virtues and none of his faults."

Ganz peDel broke in then. "Is there anything *I* can do?" His voice sounded eager and—perhaps—just a trifle hurt.

Kris looked thoughtful. "Well, I—"

"He can help me," said Norvis quickly. "The Secretariat has a great deal of important work to do, and Ganz will be very useful."

"Good enough," said Kris. "Meanwhile, Dran and I will be training men. I have an idea for a group of men who would be a sort of Peacemen group of my own. Those who qualify will be well paid."

Bor pePrannt said: "I can teach them to use knives, Ancient One."

"Good," said Kris. And they fell to planning their group.

Later, when the others had gone to bed, Norvis raised the first objections.

"I can't see it. Just scraping up an army and marching into Bel-rogas like that—it can't go. I don't like it, Kris."

"Why? Great Light, why?" Kris gestured angrily. "Look here, Norvis—all my life, I've hated those devils, and I know you hate them, too!"

Norvis' face darkened. "And for good reason," he said bitterly.

"All right, you hate them," Kris persisted. "And now that I propose to smash them down, you draw back. Great Light, Norvis, what's going on in your head?"

Norvis sat back and gently smoothed his ruffled down. He was silent for a moment, then turned to face Kris. When he spoke, he seemed to be choosing his words with utmost care.

"Kris—you're not a plotter. You are a fine leader, but you can't see more than three days into the future. I agree that the Earthmen should be wiped out—the devils—or at least driven back to the sky they came from."

"So?"

"Not your way, though. Not by just busting in there and wrecking the place."

Kris frowned quizzically. This had happened time and time again in the past, and he was getting not to like it. He would present a plan,

carefully thought out and closely reasoned, and Norvis would hew it to threads in a moment's time.

Who is this Norvis anyway? Kris asked himself. He thinks he's smart, and I'll bet he thinks he can run me. Well, he never has, and he won't start now.

"We attack Bel-rogas next week," Kris said firmly. "My way. I've got the approach strategy all worked out."

"All right," Norvis said wearily. "But you'd better start wearing a brass hat if you don't want to rejoin your ancestors as fast as Del did."

"What do you mean by that?"

"I mean that you won't outlive the gutting of Bel-rogas by a month," Norvis said quietly.

"Are you dictating policy to me?" Kris demanded.

"Far from it," said the Secretary. "Just offering my opinion."

"Your opinion's not needed," Kris snapped. "I'll manage by myself."

"Very well," Norvis said. He closed his eyes for a moment. Then, changing the subject, he said, "Oh, by the way—what do you plan to do with all that cobalt we have cached away on the Bronze Islands?"

"What does that have to do with—"

Suddenly Kris paused, stood up, smiled slyly as a thought occurred to him. *I'll show Norvis who's a plotter*, he thought vehemently. "Go get Dran peDran. Wake him up."

"What for?"

"We're journeying to the Bronze Islands tonight."

Norvis' face wrinkled. "You're . . . why?"

"You'll see," Kris said. He didn't elaborate, and he made sure that the expression on his face would discourage Norvis from asking any further questions.

IX

The *Krand* left the harbor of Tammulcor a week later, carrying Kris, Dran, a crew of eighteen picked men, and a noisy, restless cargo of deests. The false bottom was also in use. Eight million weights in cobalt lay hidden there. It had been a quick but arduous job, getting the cache out of the Bronze Islands earlier in the week.

They pulled out of the Bay of Tammulcor and headed north up the river Tammul. A dinghy-load of Peacemen cut across their path before they had gotten very far upriver, and a tall man at the front of the small boat held up one hand.

"Hoy! Who are you, and where are you heading?"

"Captain Kris peKym Yorgen," Kris replied. "Heading for Gelusar to market these deests." He gestured at the herd on the deck.

The Peaceman looked up at him suspiciously for a moment. Kris waited impatiently. They were still worried about their missing cobalt, evidently—but since the recent upswing in Bank of Dimay currency, they were somewhat relaxed. *Somewhat*. Kris hoped he wouldn't be put to the nuisance of another three-

hour search; a delay of that length might be utterly damaging to his project.

Finally the Peaceman said, "Deests, eh? Very well, head upriver. They'll probably stop you again at the Bridge of Klid, though."

"Thanks," Kris said. "I appreciate the clearance. Any news of the missing cobalt, by the way?"

The Peaceman shook his head. "All is quiet. We're sure we'll find the money soon, though. No one's being allowed out of Dimay without full search."

"Wise move," Kris said. "I hope you won't search fruitlessly for long."

"Something tells me the cobalt will come to light soon," the Peaceman said. "Good voyage to you, captain."

"And a pleasant night to you," said Kris. "Great Light illumine you."

"And you," the Peaceman replied.

The dinghy glided away. "All right," Kris yelled. "Up river to Gelusar, now!"

It was early evening as they passed under the Great Cor Bridge, out of the environs of Tammulcor, and up the sluggish Tammul. The Great Light had begun to set, the Lesser Light was not yet in evidence, and the air was moist with promise of the evening's rain yet to come.

Kris stood on the deck, listening to the quiet complaining of the deests. Behind him, Tammulcor shrank in the distance; Gelusar lay

far ahead upriver. The night was still young. If they made good time, they would reach the landing point just about this time the following night.

After a while, Dran came out on deck.

"Everything is well, captain."

"Good," Kris said. "It's going to be a tough trip, sailing upriver."

From starboard came the cry of one of the men, calling out the sounding.

"All well," Kris yelled back. He peered out at the wide, flat stretch of water ahead. The Tammul was a shallow, sleepy river, and Kris had little mind to run aground in the night—not with eight million weights of cobalt on board.

"Here comes the rain," he murmured to Dran, as the nightly drizzle began to sprinkle down. "Better get the deests under."

"I is just about to do that, captain," Dran said. "Hoy there! Drosh! Marn! Down with those deests!"

Kris stood alone on deck for a while, then strolled aft to the helmsman.

"How's it going, Dom?"

"We'll make it, captain."

"We'd better," Kris said. He frowned. "Not much wind tonight, is there?"

"No, captain," the helmsman said locanically. "It's a hard night for sailing, captain. A very hard night."

Kris nodded and walked away. It was a very hard night indeed.

Morning came, and the *Krand* was

still a good distance from its destination. Other boats were moving downriver from Gelusar, heading toward Tammulcor, and occasionally a wandering Peace dinghy would cut by, peering suspiciously at the ship without hailing it. It was the river patrol, on guard for strange craft.

By the time evening had arrived, the journey was nearly over. Kris peered ahead into the gathering dusk at the shore to the westward, searching for the landing.

"All right," he said after some time. "There's where we go ashore." The *Krand* moved silently through the dark waters to the inlet, and they dropped anchor as close to shore as possible. Kris called the men on deck.

"We're landing here," he said.

"I thought we were going to Gelusar," a deckhand said. "Isn't that where we're going?"

"We're going to Bel-rogas," said Kris. "And it'll be a lot easier to leave the river now and finish the trip overland than to try to carry eight million weights of cobalt through the heart of town."

Dran nodded. "Is right. We is about ten miles from Bel-rogas now. Is not so bad."

"We'll have to make three trips, Bronze Islander," said Bor pePrannt unhappily. "We've got a hundred manweights aboard, and twenty deests. The best of our animals can't do better than two or three manweights of cobalt."

"Not so," Kris said. "Each deest's going to carry five manweights."

"We can't do that!" Bor pePrannt protested. "They can't carry that much!"

"They can if we walk alongside of them instead of riding on their backs," Kris said. "We've only got ten hours till dawn. If the Great Light rises while we're still in Bel-rogas, we're finished. We'll have to make it in one trip and no doubts about it."

He looked around. "Everyone understand, then? Dran, get your crew down and start unslinging the cobalt from the hold. Bor, get a couple of men and drive the deests out on shore. We can't waste any time."

It was a strange sight—twenty deests, each groaning and swaying under a fortune in cobalt, each with a man walking at its side urging it along.

The Lesser Light glimmered faintly above as the strange caravan wound its way through the narrow dirt paths that led to Bel-rogas. Kris and his crew had anchored ship about two miles below the Bridge of Klid that spanned the Tammul, and, under cover of nightfall, they were heading west and north toward the School.

Two roads forked out from the Bridge of Klid—one going directly into Gelusar, the other bypassing the Holy City and carrying outward to Bel-rogas, which lay some five miles west of Gelusar. Kris guided his caravan through the backroads and byways to the fork, and then along

the little-traveled road from there to Bel-rogas.

The coins jingled faintly as the deests struggled along under them. It was not, thought Kris, exactly a quiet group traveling along the road. He fingered the butt of the pistol at his sash; in case anyone should come down the road from the School, there might be trouble. It wouldn't be easy to explain where they were heading in the middle of the night with eight million weights of cobalt.

There were no difficulties, though, and finally they reached the borders of the School. Spacious parks bordered Bel-rogas; standing on the outskirts, Kris could see the group of majestic Earthman-designed buildings located around the central campus, and the spreading lawns that surrounded the entire School.

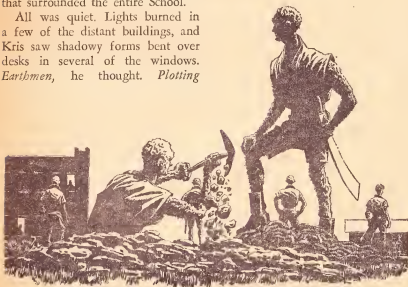
All was quiet. Lights burned in a few of the distant buildings, and Kris saw shadowy forms bent over desks in several of the windows. *Earthmen*, he thought. *Plotting*

against us, late at night. A quiver of hatred ran through him.

It had taken five hours to cover the ten miles from the Tammul to the School. Five hours yet remained before the Great Light rose. Five hours to plant the cobalt and get moving back to the *Krand*. It was more than enough time.

He paused for a moment, mopping away the rain that had soaked into his eyes, and listened to the noisy breathing of the deests. They were struggling under the heavy load of coins, and some of them were scraping at the ground with their hoofs. They couldn't bear the burden too much longer.

"Let's go this way," Kris said. "Get the deests in line and follow single-file."



Stealthily, he edged into the grove that led to the School. He brought the caravan to a halt about half a mile from the nearest of the buildings. No one was around, though a light burned in a window of the building.

"Unload the deests," Kris ordered. "And don't clank those loops of coins around too much."

He joined them in the job of unloading, and before long eight million weights of cobalt lay in a deceptively small pile on the grass. Kris turned to Dran. "Pick two men and start driving the deests back to the ship. I don't want them bothering us while we work."

"We could always drive them down into the School and stable them there," Dran suggested.

"It wouldn't do," Kris said, chuckling. "The idea lacks practicality."

Dran chose his men and began herding the deests back out of the School grounds. Kris turned to the others.

"Unload those shovels," he ordered. He picked out four men and said, "You come with me. The rest of you deploy yourselves in a loose circle around us."

Each of his four chosen men grabbed a shovel and Kris led them as close to the School building as he dared. "We dig here," he said.

The eight million weights of cobalt took up more than thirty-six cubic feet. That meant a pit three by three by four, at least. Shovels bit into the ground.

It was slow work, because Kris insisted on a tidy job. When one of his men showed signs of tiring, he sent him back to be replaced with a fresh digger. They had the pit finished within three hours; the first glimmers of the Great Light were beginning to filter through.

"In with the cobalt, now," Kris said. He watched as they lowered the heavy loops of coin into the ground and painstakingly replaced the turf over the pit. He stepped back to survey the job.

"You'd hardly know anything was under that hump in the ground," he said approvingly. Then he chuckled. "Let's get back to the ship. The Earthmen are going to have a hard time explaining *this* away!"

X

The next few months moved slowly, as far as Kris was concerned. They were months of waiting, of exasperating detail-work and fine-lined planning. Slowly, he began to organize the sort of group that he felt would best serve his needs.

It took delicate juggling. Norvis peKrin took over the Scrip Exchange Office, carefully keeping the sagging monetary system of Dimay on a fairly even keel. But the paper scrip of Pelvash was none the less running dangerously low. Fewer and fewer people came in to exchange their money, true; since they assumed that it must be worth something, they were reluctant now to give it

away for half its price. The money had acquired an artificial backing which consisted solely of Kris' pledge to redeem it for Pelvash money—a pledge that no longer mattered. It hadn't taken long for the Merchants' Party to accumulate several million in Dimay scrip by their trading policy. It now was back at its earlier value—and Kris and Norvis had thereby doubled their capital.

Meanwhile, Kris started his training program. It involved much word-of-mouth activity, a technique he was rapidly becoming proficient at, but before long he had assembled a fairly large corps of young men, drawing them from the landless farmers in the outlying districts, from the irreverent sailors willing to jump their papers, from anyone else who wanted to serve. Under the leadership of Dran peDran and Bor pePrannt, the men drilled every day in the flatlands just north of the city. No specific target had been revealed, but the men enjoyed the discipline.

Young Ganz peDel began to show promise, too. Norvis had suggested that he, too, be trained, and at first Kris had been reluctant. But the boy showed he was made of the right stuff. He could handle a psych-knife as well as, if not better than the others.

He had worked up a rather clever little exercise for the men. They formed up in a column on their deests, and then, galloping full tilt at a wooden pole, each man swung at it with his knife, lopping a bit

off the top. Of course, as it grew shorter, each man had to bend lower to get his bit off. It improved their aim with the knife tremendously.

Yes, Ganz showed promise.

Marja geDel was doing her job well—even brilliantly. Kris became definitely aware of it the day a loutish-looking farmer in his thirties came to the office and asked to join Kris' men.

"Why do you want to join?" Kris asked. Norvis had suggested the question; it was helpful to know men's motives for doing something that was unheard of in Nidorian history.

The lout twisted his fingers together. "Well, Ancient One, I understand I can make a little extra money, which, Light knows, we need. My wife said she'd manage the farm; she said it was time I did something to help drive the devil Earthmen away. I never thought much about it, but she's right, I guess. All the women seem to think we've got to do something."

"We do," said Kris, hiding a grin. "Report to Garf peDom's farm tomorrow—just outside of Tammulcor, on the Tammul Road. That's our training field. Come at the Hour of Second Prayer."

"I'll be there, Aged One."

When he had gone, Kris thought over what he'd said. The women were definitely coming round. Preparations, then, were nearing completion. Now other wheels had to be set in motion—and for that, he

would have to resort to his skill at rumor-mongering.

"Is there anything to the story that the Earthmen robbed that Bank?" Kris inquired casually, one evening, in a Tammulcor bar.

The barkeep looked surprised. "Haven't heard that story myself. Where'd you pick it up?"

Kris shrugged. "Oh . . . it's all around. I thought you could give *me* some further information, that's all."

The barkeep leaned forward, interested. "Tell me about this, will you?"

"Seems the Earthmen—this is the way I got it—used some kind of magic to get into the Bank, and floated the cobalt out."

"No!"

"That's the story," Kris said. "They floated it right up to Gclusar, out to that School of theirs, and they've got it hoarded away some place."

"The devils!"

Another man came up—a seaman named Bort peDril Sesom, a man Kris knew vaguely. "What's this I hear?"

Kris told him.

"The Earthmen, eh? Well, I never did trust them, never did at all."

Meanwhile, far at the other end of the city, Dran peDran curled his wiry fingers around a mug of psych-beer and smiled confidentially at the fat merchant sitting opposite him.

"It's the Earthmen, all right," the Bronze Islander said in a hoarse

voice. "They is stolen the cobalt and buried it somewhere. I hears that everywhere."

"The Earthmen, you say? Stole the cobalt? Why'd they do that?"

Dran peDran shrugged eloquently. "Does you understand the Earthmen?" he asked.

"All I know about the Earthmen," the Merchant said, "is that I don't like them and I don't like their School. And if they robbed the bank—"

While in a third section of the port, Bor pePrannt Hebylla growled loudly, "It's the Earthmen! The devil Earthmen who have our money!"

People crowded close around in the bar. "What? The Earthmen? Where'd you hear that?"

"It's all over," Bor pePrannt said. "Everyone knows they took the cobalt!"

A long-nosed farmer with fiery eyes crashed his hand down on the table. "We ought to kill them!" he roared.

Someone else picked it up. "Kill them! Kill them!"

By the next morning, there was hardly a man in Tammulcor who did not suspect that it truly was the Earthmen who had robbed the Bank of Dimay.

Sentiment began to gather. Forces started to be exerted. The rumor spread—from Dimay to Pelvash, from Pelvash to Thyvash, around the coast from Gycor to Lidacor to the distant province of Sugon.

The Earthmen had robbed the bank!

It was on everyone's tongue—or rather, *almost* everyone. Two significant groups were yet to commit themselves to an opinion. No word was forthcoming from the Council of Elders—and no denial had yet emanated from the Earthmen at the Bel-rogas School of Divine Law.

"We've got them where we want them now," Kris said. "We have to keep our fingers on the pulse of the world. When the time is ripe—we strike against Bel-rogas."

"And how do you know when the time will be ripe?" Norvis asked.

"Don't worry. I'll know."

Suddenly, Ganz peDel appeared at the door of the room. Kris looked up. "What is it, Ganz?"

"Visitors," the boy said. "Old men. I think they're priests." His face made no attempt to hide his distaste for the clergy.

"Show them in," Kris said.

The visitors entered, walking stiffly. They wore the blue tunics of priests, and over them light traveling wraps.

"Good evening, Ancient Ones," Kris said respectfully.

"May the Great Light illumine you," said the elder of the two priests.

"Peace of your ancestors be with you always," Kris muttered. "May I ask what brings you here, Grandfather Bor peDel?"

The Priest-Mayor of Tammulcor took a seat. "I think it is time I called upon you, my son." He ges-

tured toward the man who accompanied him. "This is Marn peFulda Brajjyd," he said. "Priest-Mayor of Vashcor."

"Great Light's blessings," Kris said.

Marn peFulda nodded curtly. "You're Kris peKym Yorgen, are you not?"

"I am. And this is Norvis peKrin Dmorno, my assistant."

"We've already met," Marn peFulda said.

"Yes," said Norvis. "We know one another."

Kris frowned over that for a moment, then brushed it from his mind. "May I ask your business with us?"

"Briefly, this," said the Priest-Mayor of Tammulcor. "My colleague and I represent troubled areas of a troubled world. We fear for Nidor. We have long thought that Nidor has been in serious danger, and have given thoughtful consideration to that which must be done to . . . ah . . . hold things together."

"As have I," Kris said. "But—"

"We've concluded that something's got to be done about Bel-rogas," Marn peFulda said bluntly. "We won't mince words. You two have built up a powerful organization. We're here to offer you our spiritual and political support."

Kris stood up and crossed his arms in a by-now customary gesture of power. "I see. You're here to tell me that you're not in full agreement with the policies of the Council of Elders, I take it."

Marn peFulda spread his hands and smiled with delicate subtlety. "In a word—yes."

Kris frowned and glanced from one priest to the other. *Very nice*, he thought. *It's shaping up. It's taking form. Now I've landed two priests, and big ones.*

"You see," the Grandfather went on, "something must be done or our religion will be splintered. Already there is a man wandering around the countryside of Lebron, calling himself the New Lawyer; he thinks he is a second Bel-rogas. Something must be done to strengthen the Council and purify it of the influence of the Great Darkness."

"We understand you've organized some men," Bor peDel said hesitantly. "We would like to suggest . . . ah—"

"That you take them to Gelusar," Marn peFulda completed.

"Indeed?" Kris glanced at Norvis. "For what reason, may I ask?"

"There's a current rumor that the Earthmen were behind the robbery of the Bank of Dimay," Marn peFulda said. "You're aware of this, of course."

"Ah . . . yes."

"Very well. We have learned through ecclesiastical channels that Elder Grandfather Kiv peGanz Brajjyd has reluctantly decided to hold a public hearing—in order to squelch this rumor. The Earthman Smith has agreed to appear and speak in his defense."

"And you think," Kris said, "that

the presence of myself and my men at this hearing might—"

"Might be worthwhile—especially if Smith's defense should appear particularly unconvincing."

Kris nodded. "I thank you for your information, Ancient Ones. I'll consider it carefully."

"May the Great Light illumine your mind as He does the world," Marn peFulda intoned.

"May He illumine yours," Kris responded.

After the priests were gone, Kris turned to Norvis, who had remained silent throughout the entire interview.

"Well? What did you think of that?"

Norvis smiled. "Encouraging, all right. How do you plan to deal with what's come up."

"I'll go to that hearing, of course—with a hundred of my best men."

"And the local situation, here in Tammulcor? Who'll be in charge while you're gone?"

Kris thought a moment. "Oh, pick one of the youngsters in the Party. Give him a chance to learn how to administrate, while I'm away. Might as well not let the new blood go stale, you know."

"Good idea. How about Dran peDran?"

Kris shook his head. "Don't like. Dran's a clown. Besside, the men won't listen to a Bronze Islander."

Norvis snapped his fingers. "Say, what about young Ganz peDel? He could probably handle some of the job while you're in Gelusar."

Kris frowned. Ganz? Could be, he thought. "I suppose so," he said. "If you think he's worth the trouble of bringing along. But I guess they'll listen to Del's son, young as he is. All right—make Ganz peDel my deputy. I'm going to leave for Gelusar immediately."

XI

The Tammul Road followed the Tammul River, winding its way from Tammulcor to Holy Gelusar on the Dimay side of the stream. It was wide and well-turfed, neither so hard that it hurt a deest's cloven hoof, as some of the desert roads did, nor so soft that the animal had trouble moving at a rapid pace. It had been built for heavy traffic, but it had never seen the traffic it had on a spring day in the Year of Brajjyd, in the 324th Cycle.

A hundred men, wearing the black vest and trousers of seamen, modified by slashes of bright scarlet across the back and the chest, rode in precision array on a hundred sleek deests. At their head rode Kris peKym Yorgen, and to his left, Dran peDran Gormek.

In a column, four wide by twenty-five long, they trotted up the broad highway toward the Holy City. The thundering sound of the hoofs of a hundred deests echoed in the air as they went on.

Word had already preceded them that Kris peKym of the Clan Yorgen was going to Gelusar to watch the Council of Elders question the Earth-

man, Smith; farmers lined the road, anxious to get a glimpse of the man who had saved their money from disaster, cheering the men as they rode northward.

"Bring back our cobalt, Kris peKym!" they shouted.

"Get our money for us, Ancient One!"

Proudly, the hundred men followed their captain, who seemed to ignore the accolades, but secretly was reveling in them. *Ancient One indeed*, he thought. *There are times when titles of honor become empty of meaning.*

He gripped his reins tightly with one hand and waved broadly to the people. A few yards behind the hundred men came five more deests, and upon them rode men wearing the honored blue robes of the priesthood, two of them bearing the white slashes of Priest-Mayors. As they cantered by, the farmers bowed low, and their cheering ceased.

It was a good move, thought Kris, having the priests ride in procession with them. The very fact that the Council of Elders had seen fit to question the Earthman in public, and the fact that five priests were accompanying Kris peKym to the hearing, would deepen the suspicions of the Earthmen which had begun to take root in the mind of the people.

When the column rode into Gelusar, Kris noticed with pride that none of the men seemed to show the long hours of travel; they held their heads high and rode erect, like

the well-trained soldiers they were. He knew no one would be surprised that the men were armed; it was foolish not to be armed in these troubled times, and a psych-knife was, after all, a handy weapon. The fact that these blades were half again as long as an ordinary knife went unnoticed.

Kris had already sent a man ahead of the column, riding at a hard gallop most of the way, to arrange things. By the time the hundred men reined up before the Inn of the Purple Deest, less than half a mile from the Great Temple itself, the arrangements had been made.

The innkeeper, a rotund, oddly gloomy-looking man, came out in front of the old inn and held up a hand in greeting.

"Hoy, Kris peKym!"

"Hoy," Kris said. "We have traveled far, innkeeper."

They exchanged blessings, and then the staff of the inn showed the men to their rooms, while their deests were toweled and fed.

That evening, in the banquet hall, Kris was to address his followers. They were not the only ones present; there were curious townspeople there who had come to the Inn of the



Purple Deest for their evening meal, curious to see the strong young man who had upset Nidor so greatly. Kris' words were meant for their ears as well as those of his own men.

The meal had been blessed by the Priest-Mayor of Vashcor, and when it was over, Kris pulled aside his plates and climbed to the top of the table itself. A sudden hush fell over the great banquet hall.

Kris let his eyes wander over the upturned faces for a moment. They were *his* men he saw—his own. They were tough and strong and eager, ready to follow the orders of their captain.

"Youngsters," he said, "we have come to Holy Gelusar to right a great wrong. It has been said that the Priesthood of the Great Light has done us wrong—has betrayed us to the powers of the Great Darkness. Let us, in all honesty, admit that there is some truth in these charges.

"But let us not forget the greater truth. Let us not forget that if our priests have erred, they have erred as men, not as priests.

"We have with us, as you know, five priests, two of whom hold the noble position of Mayor. I have spoken to them concerning what has happened on Nidor in the past six Cycles—the past hundred years—and they agree on one vital point. The Earthmen are not, as they claimed, Messengers of the Great Light; they are Agents of the Outer Darkness!

"Our priests have been misled, true—but no more than we. And

they, like ourselves, have come to see the truth. Why else would they question the devil Earthman in public? Our priests know what they are doing now; they see the Earthmen as they really are. As fiends! *As devils who have come to lead us from the Way of our Ancestors!"*

He paused, then continued in a softer voice, "Of course, not all of the priesthood sees the truth. Naturally, being men, some of them are still in error. But we should not hold this against the Priesthood as a whole. We should not hold our Ancient Grandfathers accountable as a group for the errors of a few.

"We have come here to witness the questioning of a devil, the Earthman Smith. We don't know what his answer will be—but we do know one thing. No demon, when spoken to in the name of the Great Light, can lie. We will know, then, Smith's true status. If he is a demon, he will be unable to lie. He will be unable to deny that he and his fellows have stolen and hidden our money. If he is but a man, he will be able to lie—but then we will have little to fear from him. In either case, our path is clear. Nidor and the people of Dimay must get their money back!"

Applause rang through the hall loudly, making it impossible for Kris to continue. Although he held up his hand for silence, it was some minutes before he got it. He noticed that the townspeople in the back of the banquet hall were cheering too.

When quiet finally came, Kris went on.

"It has been said that we—the Merchants' Party—are against the Priesthood and the Council of Elders. You and I know that this is untrue. It is true that our former leader, Del peFenn Vyless, who was murdered by some unknown enemy of ours, spoke against the Council. But he spoke against them because they were misguided, not because the Priesthood itself is wrong."

It was an out-and-out lie, and Kris knew it. But propaganda is propaganda.

"We have, then, a job to do. But we must never lose sight of the fact that we are here to save our priests, not to condemn them. We are here because we want to see Nidor return to the Way and the Light! *And we will!*"

There was another prolonged burst of applause. Again, Kris signaled for silence.

"I will now ask Grandfather Marn peFulda Brajjyd, Priest-Mayor of Vashcor, to lead us in a prayer that those of the Priesthood who have not yet seen the truth will be given the truth by His All-Effulgent Majesty, and that the common people of Nidor will again be blessed by His radiance."

The priest rose as Kris stepped down from the table. Looking grave and impressive in his blue robes, Grandfather Marn peFulda began the prayer.

The Square of Holy Light was

jammed with Nidorians on the day that the hearing began. The huge open space in front of the Great Temple was overflowing with milling people; talking, whispering, shouting, and fighting. Here and there, little knots of people gathered to argue, quarrel, and trade blows.

Kris peKym Yorgen and his hundred men marched into the Square less than two minutes before the scheduled time of the hearing. In spite of the close-packed tightness of the mob already present, the measured tramp of their high-heeled riding boots automatically cleared the way for them. They marched directly to the wall of the Great Temple and stood quietly, waiting for the Elder Grandfathers to appear on the broad balcony above. The air was warm and clear; it was a good day for a public hearing.

At precisely the Hour of Thanksgiving, an acolyte stepped into the tower of the Great Temple and swung a heavy mallet with ponderous dignity. The huge bronze gong that hung there sounded its mellow note across the city, and the crowd in the Square of Holy Light became silent, waiting expectantly.

Then the shutters of the balcony drew slowly aside, revealing the assembled Council of Elders in full ceremonial array. The bronze chains of their high office were draped across their blue and white robes, and their bronze coronets shone brightly in the glow of the Great Light from the eternally clouded sky.

At the left of the balcony stood

the Earthman, Smith. He was simply clad, wearing a pearl gray shirt and trousers. The long sleeves and trouser legs made the clothing unlike any normally seen on Nidor.

But it was not his clothing that drew Kris' attention. It was Smith's physical appearance. This was the first time Kris peKym had ever seen an Earthman, and the sight startled him.

In spite of the fact that the Earthmen had been on Nidor for nearly a hundred years, they were not often seen by the public. They kept themselves secluded at the School—and, while most Nidorians were aware of the presence of the alien men on their planet, few had seen them, except for the students at the Belrogas School of Divine Law.

Kris studied the Earthman carefully. He seemed unusually big, as he stood there on the balcony near the Grandfathers. Kris had always thought of himself as an exceptionally big man, but it seemed to him that Smith was yet somewhat taller than he was. It was a depressing thought.

People said that the Earthmen actually did have body hair, but, if they did, none was visible to Kris. Smith's hands and face looked naked and pink, while his chin and the top of his head had, if anything, too much hair.

His topknot was dark except for the graying at the temples, and his beard was long and straight and thick. It covered his chin completely. The whole effect was oddly gro-

tesque, but somehow impressive. It gave an appearance of great power to the craggy features.

Kris stood silently, his arms folded, waiting for the hearing to begin. He felt uneasy in the Earthman's presence, sensing someone even stronger than himself.

Another sound of the giant gong echoed across Gelusar. Kris' ears shook at the impact of the sound wave. The gong was a mighty one; it was likely that it went unheard nowhere in the Holy City.

It rang a third time, and then Elder Grandfather Kiv peGanz Brajjyd, Leader of the Council, stood up. He held out his arms and crossed them in blessing.

"The peace of your Ancestors be with you always!"

"And may the Great Light illumine your mind as He does the world," Kris found himself mumbling in response.

Kiv stepped forward. "My children," the Elder Grandfather said, "We are gathered here together in the Temple of the Great Light to deal with a difficult and trying matter. The Elder Kovnish will conduct the inquiry."

At Kiv's gesture, a tall, ascetic-looking Grandfather arose and took Kiv's place.

"As the Elder Brajjyd has made clear, the matter at hand is a delicate one, and we are hesitant to expose our guides from Earth to the indignity of a public trial. Yet the Council of Elders—after due deliberation

—has settled upon this method of clearing the reputations of the Earthmen and of the Bel-rogas School, whose name we all revere. I call upon the Elder Yorgen to sum up the reasons for this inquiry."

The Elder Kovnish stepped down and another Grandfather arose. Kris felt a little twinge of half-suppressed pride at the impressive sight of the head of his own clan. The Elder Yorgen was the third oldest member of the Council, and his down was silvery-gray in color.

"My children, not long ago a strange and frightening thing happened in the Province of Dimay. Unknown persons entered the bank, and took from it eight million weights in cobalt." The Elder Yorgen paused for a moment, as if the energy required to deliver a speech of two sentences had sapped his feeble strength. "Where this money is, we do not know.

"However—rumor has become widespread that our friends of Bel-rogas, the Earthmen themselves, have taken this money. You all have heard these rumors. It is the opinion of the Council that such words border on blasphemy, inasmuch as the Earthmen have long been recognized as emissaries of the Great Light Himself. We are gathered here today to hear the public denial of the rumors from the lips of the great Earthman Smith."

Kris' eyes flashed across the balcony to where Smith stood, impassive and aloof—Smith, the arch-

demon who had guided the School for more than forty years.

"Thank you, Elder Yorgen," said the Grandfather Kovnish. "The case has been stated. I call upon all of you present to witness the words of the Earthman Smith, here on this sacred ground."

Kris smiled. The Elders were playing right into his hands! Smith would be called on next—and, naturally, he would deny the charge, here in the Temple. What an uproar there would be, Kris thought, when the money turned up on the Bel-rogas grounds after all!

The Elder Kovnish gestured at Smith. "Earthman, we call upon you in the name of the Great Light to speak."

The Earthman rose.

XII

He stood there, staring mildly at the assembled Elders. It seemed to Kris that Smith was looking right through the Elders, gazing contemptuously off into the distance.

It was possible to count to ten before he spoke. Finally, he said, "Just what is it you want me to tell you?" His voice was deep, well-modulated, commanding, and there was something strangely alien about his accent.

The Elder Kovnish recoiled as if he had been struck. "What we ask of you," he said slowly, "is that you deny the charge now current among the people of Nidor that the Earth-

men were responsible for the robbing of the Bank of Dimay."

Smith seemed to frown. "I'm afraid I can't do that," he said. "Is there anything else you want?"

What the devil is this? Kris thought bewilderedly. Why doesn't Smith just deny it and get this farce over with?

The Elder Kovnish said, "Perhaps you misunderstand, Ancient One—though I hesitate to imply that. The belief is that you of Earth caused the robbery of the Bank of Dimay. I ask you to tell us this is not so."

"How can I do that?" Smith asked.

A ripple of astonishment ran through the crowd this time. What was happening was utterly unbelievable.

"Am I to understand," the Elder Kovnish said sharply, "that you therefore *admit* the truth of the rumor that the Earthmen robbed the bank?"

"I didn't say that," replied Smith.

"You neither admit nor deny guilt?"

Smith shrugged. "As you please. I hardly think the Bel-rogas School should be held accountable for its actions in so public an inquiry."

Exasperation was evident on the Elder's face. The hearing, Kris thought, had taken a bizarre twist. The Council of Elders appeared to be in great distress.

"How are we to interpret your answer?" the Elder cried.

"As you please," Smith said again.

"You may draw what conclusions you wish. The Great Light guide you, Grandfathers—and now I must leave you."

Grandfather Kiv stood up, his face dark with anger. "Hold, Smith! You have left us in doubt—and it is not fair. We have asked you for a simple answer."

"And I have given one," Smith said boredly. "I'll repeat it, though: it is, simply, that I don't care to discuss Bel-rogas matters in public. Nor," he added, "will I answer your questions privately, Elder Brajjyd. I must go now."

And Smith nodded, stepped around Kiv, and quitted the balcony, leaving the Elder Grandfathers standing in a confused semicircle, their mouths opening and closing slowly in utter consternation.

Kris didn't understand what had happened, but he saw his chance and took it.

He turned to Dran peDran and Bor pePrannt, who were standing next to him.

"Quick! Give me a boost!" He gestured at the carved, detailed figures on the wall ten feet from the pavement.

Both of them got the idea quickly enough. Within seconds, Kris had been lifted above the crowd. He reached out, tightened his fingers around an intricately-carved and fanciful gargoyle, and drew himself up, working upward onto the balcony.

The Elders were arguing among

themselves when he pulled himself over the balcony rail.

"My name is Kris peKym Yorgen!" he bellowed.

The Elders looked at him in astonishment. "What are you—"

"I'm here to see justice done!" Kris roared. "You heard what that Earthman said, didn't you? Speak up, Elder Grandfathers! Did you hear him?"

The Elder Kovnish started to speak, but Kris cut him off in mid-syllable. "You heard him, all right! You heard him refuse to deny that he and his crew took the money! And why did he refuse to deny it? It's because they *did* take it! Can any of you claim the Earthmen did *not* steal the cobalt, now that you've heard the admission of guilt from the Earthman's own lips?"

Kris glanced around belligerently. The crowd below was completely silent, watching in awe. In the center, he saw his ring of a hundred loyal men.

The Elder Grandfathers were also watching him with something like awe. This was Kris' big moment; he was determined to play it for all it was worth.

"I say the Earthmen stole the cobalt, and I say I know where it is! It's buried on the land of that School of theirs! Come with me, and I'll dig it up for you!"

"How do you know this?" Grandfather Kiv asked stonily.

"I have my sources of information," Kris retorted. "Just as you

Elders do. And I *know* the money's in Bel-rogas."

He looked down, saw the crowd beginning to move impatiently, heard them talking among themselves.

A sudden blue-white glow attracted Kris' attention, and he turned his head upward to see what it was.

It was Smith—standing on the wall of the Great Temple. A blue-white aura of radiance surrounded him, and he was lifting himself into the air.

"Look!" Kris cried. "There's the devil Smith now—on his way back to Bel-rogas to hide the cobalt!" His pointing finger jabbed the air in the direction of the rapidly-dwindling figure of the Earthman, who was outlined for a moment in sharp relief against the grayness of the sky and then vanished in the general direction of the School.

"There goes Smith!" Kris shouted. "Back to Bel-rogas." He caught his breath and yelled, "Who's for going to the School to see what's there?"

"Just a minute," Grandfather Kiv protested feebly. Kris brushed the old man aside and lifted his hand toward the west.

"Your money's there, and I can prove it! Who'll go with me? Saddle your deests, and on to Bel-rogas!"

"Wonderful, is wonderful," Dran peDran exulted, as Kris made his way down from the balcony and into the threshing mob in the courtyard. "You is a marvelous speaker."

"Get the men together and get those deests up from the Inn," Kris ordered brusquely. "The mob's with us. It's our chance, now. Smith's talk left them all confused."

"To Bel-rogas!" someone cried. Kris glanced around. It was a stranger who had said it, a Gelusar townsman. Kris grinned. The fever was catching now. Soon, a mighty torrent of men would be behind him.

"Come on," Kris said. "Let's get out of here before the Grandfathers realize what's up." He shoved his way through the mass of people and out into the street, with his men following behind.

"Get down to the Inn and get your deests," he ordered. "Then get back here."

Turning to the Gelusar people, he shouted, "Saddle your deests and ride with us! To Bel-rogas!"

Minutes later, Kris was astride his deest, a handsome, powerful creature whose long muscles throbbed beneath Kris' weight. A current of excitement ran through the crowd that surrounded him as Kris stood high in his saddle and swung his arm aloft.

Then he kicked his heel into the deest's side and began to race down the streets of the Holy City, past the



Central Railway Terminal, through the crowded, heavily-populated West End of the city, and on out onto the Bel-rogas road. The thunder of a thousand deest hoofs clattered behind him as he rode.

Bel-rogas was five miles from the City of Gelusar, in a secluded area of foothills. The twisting, brown dirt road that led there soon became a river of dust as Kris and his men raced over it. Particles of dust floated eye-high as they charged onward.

They were on their way at last, Kris thought excitedly, as he urged his deest onward. The Bel-rogas School was, at last, under attack. He glanced backward and saw a flood of men pouring after him.

Within minutes, the buildings of Bel-rogas became apparent.

Dran peDran drew up alongside him. "Where is we going first, captain?"

"We'll ride right through the School and on to where we've planted the money. Once we've dug it up, the rest will follow automatically."

Dran peDran's round head bobbed as his deest lurched and raced ahead. The Bronze Islander's eyes gleamed. "I know what you means, captain."

"There's the School!" Kris yelled. "We're riding right through!"

They climbed the gently-sloping hill and rode up to the massive but open and unguarded gate of the School. Kris laughed savagely and spurred his deest on. It plunged through the gate into the Bel-rogas School of Divine Law.

"Follow me!"

They were in the midst of a vast green swath of well-kept grass which led up to a square, thick-hewn building surrounded by smaller ones. *There's the School*, Kris thought. *There it is.*

He saw figures running toward him over the lawn, waving their arms at him and shouting angrily.

"You can't come in here! Go away!"

Students, he thought derisively. There were perhaps a dozen of them, with more in the background. He bore down on them, scattering them every which way as his deest burst into their midst, and continued on, through the main square of the School and out into the green field behind the central group of buildings. His keen eyes searched for the slight hump in the ground that would be the hiding-place of the cobalt.

For a moment he was unable to find it, and his body went cold with apprehension. What if the Earthman had discovered the cobalt—had carried it away? What would he say to the people when it proved impossible to find the treasure?

Kris' fears were groundless. "There it is," he cried, pointing to a rise in the ground. He swung himself down from his deest almost in mid-canter, and Dran dropped lightly at his side.

"Get shovels! Start digging!"

They fell to with a will, while Kris watched impatiently. After some minutes of energetic digging,

the first cobalt coin glinted from the ground.

Kris looked around and saw a tremendous crowd swarming over every corner of the field.

"Lift me up," he murmured to Dran, and the Bronze Islander and another crewman boosted Kris to his shoulders.

"Now give me a loop of coins."

They handed him a quarter-man-weight loop of cobalt, and he swung it aloft. "See! See! The cobalt is here! The Earthmen have had it all along!"

"Kill the devils!" a powerful voice cried.

"Aye," Kris echoed. "Kill them!"

He held the cobalt high overhead, showing it to all in sight. The flame started to spread through the mob; he sensed their fury building toward a tremendous explosion.

"All right, put me down."

He dropped to his feet and hauled another loop of cobalt from the opened pit. Then he glanced at Dran. "Get all this stuff out of the ground, and have twenty men guard it. I'm going to see what happens down below at the School."

But the moment he sprang to the saddle of his deest, he saw that there was no need to worry about the events at the School itself. The mob had already surged toward the buildings in the distance, screaming and shouting. Their raucous cries were thick in the air.

He urged his mount through the moving crowd of hysterical people, heading into the foremost ranks of

the mob. Behind him came his men, a tightly-packed wedge.

A group of students had lined themselves up in a desperate attempt to forestall the angry townspeople. Young men and young women, holding clubs and peych-knives, stood shoulder to shoulder in defense of the School. Behind them stood a tradition of a century of scholarship—a fine tradition, but one that lacked the strength of the older one now resurging, Kris thought.

He didn't particularly like what happened, but there was nothing he could do. The armed mob halted only for a moment when they reached the defenders. Savage cries went up from the attackers, as, pushed forward by those behind, they found themselves in close combat with the defense line of students.

Knives and clubs swung bloodily, blades flashed in the air, men fell. The students didn't stand a chance. In less than a minute, they were overwhelmed and thrown back by the maddened townspeople.

The mob pushed on, stepping on and over the bodies of the dead and dying.

Thus far, there was no sign of the Earthmen or of the priests who taught at the school. Kris tried to keep his deest moving toward the school buildings, but the stupid animal kept shying from the crowd which surged around it like an angry sea.

The priests appeared then. They held nothing in their hands, but they held their palms out before them in

prayer. At least thirty of the blue-robed Grandfathers were there, clustered in a tight little group, offering their prayers and supplications to the Great Light and the Ancestors of Nidor.

But nothing could stop the mob. Those in front, who could see the priests, were pressed on by those in the rear, who couldn't. No one struck at the blue-robed men, but they went down, just the same.

"A fire! A fire!" someone shouted. "Bring a torch!"

Kris scowled. There were valuable books in that School, papers and research documents that had been brought forth by five generations of students. Kris didn't want to lose them.

He started to cut off the mob with the torch, then saw there was no point in it. The School had already been put to the flame. A fire was brought, and a torch was hurled through a window. One—and then another and another.

The job was being done too well, Kris thought.

Where were the Earthmen? Had they left before the mob had arrived? Had they deserted their school in a sudden attack of cowardice?

Kris reined in his deest and held up his hand to signal his men to stop. The crowd was so dense that there was little to be gained by trying to push through it.

"Get back!" he called.

Like dry peych-beans in a heavy wind, the buildings caught. The

flames wavered over the buildings of the school, flickering and gathering strength. Building after building was put to the torch, until the entire campus was a raging hell of orange-red tongues.

"Look!" someone cried. "The Earthmen!"

"Where?" Kris demanded. He whirled in a full circle, ready to defend himself. But the Earthmen had no intention of fighting. They were gathered on the top of the Administration Building, which was already crackling with flames in its ground floor. Twelve Earthmen stood on the roof of the doomed structure, looking at the crowd below. Kris half expected them to say something, but there was no word from any of them.

Kris squinted. He thought he recognized Smith, but it was difficult to tell one Earthman from another in the blurring red light of the holocaust.

A rifle crackled. Then another spoke out. The Earthmen seemed to take no notice, but a bright aura of blue-white light sprang up around them. Each Earthman seemed to stand in the center of a glow of light.

"The devils!" Kris murmured. As the hellish blaze from below licked up around them, the Earthmen ascended. One by one, they lifted into the cloud-laden sky, enclosed in their halos of blue-white light. They rose upward, ascending higher and higher, drifting off into the sky, fading away from sight.

Kris watched as the twelve figures became tiny dots in the sky. At last, they were gone, seeming to fade into the clouds, and there was nothing left but the raging fire of the Bel-rogas School as the buildings collapsed into themselves one by one.

The Earthmen were gone.

Kris sat unmoving in his saddle, staring at the fading bluish sparks in the sky. He felt a sense of emptiness suddenly. They were really, actually gone—the dreamed-of goal had been achieved. Somehow, the idea that the Earthmen had been driven off Nidor was too incredible for him to grasp.

Then the emptiness faded as the realization came to him in full finality. *He* had driven them off. *He*—Kris peKym Yorgen.

He realized suddenly how still it was around him. He stood up in his stirrups and looked at the mob.

The mob had become something else—it was no longer a frenzied mass of destructive impulses, but simply a great crowd of individuals, all gazing silently at the sky. The only sound was the roar of the flames as they consumed what was left of the Bel-rogas School of Divine Law.

XIII

Kris and his hundred men rode into Holy Gelusar at the head of an oddly silent crowd of people.

He knew what the emotion affecting them all was, because he felt some of it himself. He was not ashamed of what he had done—

merely overawed at the magnitude of it.

Behind the column of mounted men marched four hundred more, each bearing on his back a great loop of cobalt coins weighing a quarter of a manweight. Eight million weights in cobalt—and yet almost no one thought about the money itself.

They marched triumphantly into town. Those who had stayed behind lined the streets and began to cheer at the sight of the money. It was a vindication—a crushing proof of the iniquity of the Earthmen. Besides, it meant Dimay money was good once again.

Kris saw that the cheering seemed to brace those who had taken part in the sack of Bel-rogas. They seemed to stand a little straighter and walk a little more briskly, and the curious air of depression lifted.

By the time the procession reached the Square of Holy Light, the city of Gelusar was thoroughly aroused. A wild, demonstrative crowd preceded them, cheering and howling their joy.

"The story will be spreading," Bor pePrannt whispered to Kris. "It must be sweeping all over the city by now."

Kris nodded. "I know how it'll be. It'll keep getting more and more distorted every time it's told, until by the time it reaches the East End they'll be saying I throttled Smith with my bare hands."

He led his men into the Square and ringed them around it. Three

streets led into the Square that faced the Great Temple, and Kris saw to it that each of the three was blocked with a deployment of armed and mounted men.

"Don't let anyone in!" he shouted. Then he stood up in his saddle and raised his voice so that all those who were already gathered in the square could hear.

"Leave the Square! Clear us room! Out! Move out!"

The shout was taken up, and, slowly, the people began to filter out of the Square and into the streets. Only the four hundred men who were carrying the coins were permitted to stay. They stood in the middle of the Square, hefting their loops of coins, looking proud of themselves and of Kris peKym. Rightfully so, Kris thought.

He wheeled his deest around and looked at the balcony of the Great Temple. It was shuttered and silent. Turning his mount again, he looked at the men who carried the coins.

"All right," he said. "Let's put it where it belongs! Put it in a pile! Heap it up in the middle of the Square of Holy Light. Let's show the people what the devil Earthmen have done—and what they can do no longer!"

They began to drop their loops in the spot at the middle of the Square, a circular slab of obsidian that marked the center of the Square of Holy Light.

Loop after loop of coins jingled into the heap as the men threw them

from their shoulders. Several of the copper wires broke, and the coins scattered, jingling and rolling over the pavement, while those outside the ring of mounted men watched in awe as the pile grew.

"Keep your hands off those coins!" Kris shouted. "The man who tries to take so much as a single weight will die!"

He signaled to the mounted men who blocked the streets, and the oversized peych-knives came out of their sheaths and were held high, their polished steel gleaming in the afternoon light.

It was an unnecessary precaution. The pile of coins was not touched. No one would dare, not with all eyes upon the Square.

And still there was no sign from the Great Temple.

Kris caught sight of Dran peDran and signaled him to come over beneath the balcony. Dran trotted his deest over to his leader.

"Does you want something, captain?"

Kris pointed at the tower of the Great Temple, where the huge gong hung. "You're a good topman, Dran. Think you can climb up there and hit that gong?"

Dran looked startled for a moment, then grinned. "I does it, captain." He turned his deest and headed for the wall.

Kris watched as the agile little seaman stood up on the back of his deest and leaped toward the same carved figures that Kris had climbed a few hours before. But Dran didn't

stop at the balcony; he clambered on upward to the roof and then worked his way up the steeple to the great gong.

He reached his goal and waved cheerfully to Kris. Kris returned the gesture, and the little Bronze Islander picked up the heavy mallet that stood near the giant metal disk.

The reverberating note rang out deeply across Gelusar, and the crowd became hushed. It was as though, Kris reflected, the gong itself had some tremendous power of its own over the people of Nidor.

"Again!" called Kris, and again the sound rang out, echoing in the still, humid air.

If it had an effect on the people of Nidor, it also had an effect on the Priesthood. The shutters of the balcony moved slowly apart, and Elder Grandfather Kiv peGanz Braj-zyd stood there, looking old and extremely tired.

Kris rose in his stirrups, facing the old priest, and bowed his head. Then he looked up again at the balcony.

"Honored and Ancient Grandfather," he said ringingly, "There is the money which the Earthmen—*stole!*" He waved at the great heap of metal in the middle of the Square.

"We have driven the demons off," Kris said. "I, and the people of Nidor, have rid the land forever of the agents of the Great Darkness."

The old priest could do nothing but stare at the heap of cobalt in the middle of the Square of Holy

Light. It seemed to be the only thing in the world for the aged man.

"I see," he said hollowly, still staring at the heap of coin. His voice was so soft that Kris could barely hear it.

"Return the money to the Bank of Dimay," Kris said. "Our savings and our world are safe again. May we have your blessing, Grandfather?"

The Inn of the Purple Deest became Kris' Gelusar headquarters. He established himself there, and began to send feelers into the Holy City, gauging the reaction of the people to the sudden destruction of the School.

The word was good. He was becoming known as Kris peKym the Exorcist, and, faced with the overwhelming proof afforded by the discovered cobalt, the reputation of both the School and the Earthmen had dwindled to nothing overnight.

On the third day after the burning of the School, the now-famed Hundred Men rode to the Great Temple with Kris at their head. They arrayed themselves around the square while their captain dismounted and walked alone into the Holiest Temple of the Great Light.

Kris pushed open the giant doors and stepped into the dimness of the Temple. He was alone. There were no other worshipers in the huge auditorium. He stood at the door for a moment, feeling dwarfed by the building's vastness. Then he strode somberly down the aisle between the

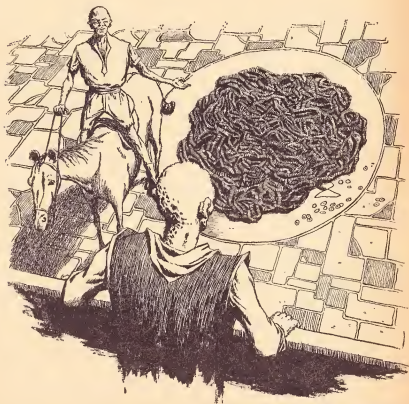
empty seats, walking toward the Altar of the Great Light.

It was near the Hour of Midmeal, the only time of day when the Great Light could actually be seen as a single entity. At that time, the Great Light became a dimly-outlined spot of fire directly overhead. During the morning and the afternoon, the Great Light spread all over the sky; the eternal cloud layer that covered Nidor glowed with His radiance. But near midmeal, His effulgence

burned through the sky and illuminated the land beneath.

His Light was focused through the huge lens in the roof of the Temple, creating a glowing ball of light on the top of the altar.

During the hour, the focus of the light moved slowly across the altar. Kris felt oddly alone in the huge, high-ceilinged room. He paused as he neared the altar, watched the shimmering image of the Great Light.



Have I done right? he asked of the glowing image on the altar. There was no answer.

Kris bowed before the image on the altar and then seated himself in the front row of seats, those usually reserved for the Priesthood. Kneeling in prayer, he waited for the mid-day ceremonies to begin.

Kris had his eyes on the altar when the priest and his acolytes came in, and he didn't move his gaze. But he watched them with his peripheral vision as the File of Sixteen came from the sacristy to the altar.

He could see that the priest who led the File had glanced out over the auditorium, but it was difficult to read his expression. Was he surprised because there was no one else in the Temple, or was he surprised that there was anyone there at all?

Kris forced the conjecture from his mind and concentrated on the blaze at the altar. In his hand, he held the Book of Liturgy, which dictated the service for the day.

The File of Sixteen arranged themselves before the altar. Each of the sixteen acolytes was arrayed in a different robe; their color and designs represented the traditional patterns of each one of the Sixteen Clans of Nidor. Kris felt a glow of pride as he recognized the red and yellow-green check of the Clan Yorgen at the left of the priest.

Each of the Clans was represented—the Yorgen, the Brajjyd, the Dmorno, the Shavill, the Hebylla,

the Sesom, the Nitha, the Vyless, the . . .

He could enumerate every one of them, right down the row. He had thought that the religious training of his childhood had faded completely during his years at sea, but he realized that old Kym, his father, and Elta, his mother, had pounded more into his brain than he had thought.

After a moment of silent prayer, the priest said, "O Great and Holy Light, we pray that the offering we bring to you this midday will be acceptable in Your sight."

He turned and faced the auditorium. He seemed not to notice that Kris peKym was the only worshiper in the building.

Kris had given careful orders to the Hundred Men. They were not to force anyone away from the Great Temple; they were simply to tell those who came that Kris peKym was inside and wished to be alone. So far, no one had entered, and now it was too late. The service had begun.

The priest was a young man, Kris noticed. He could not have been ordained for more than a year or so, if that. His voice was strong as he gazed out at the empty auditorium and said, "We have gathered here to perform the Holy Sacrifice to Him Who rules our lives and our destinies."

He raised his arms and crossed them at the wrists. "Let us give our prayers to the Great Light."

Kris knelt and read the prayer from the Book of Liturgy.

"O Great and Brilliant Light, let this, our sacrifice to You, be blessed. Guide us, if You will, in the Way of our Ancestors, and the Law of the great Lawyer, Bel-rogas, who was illumined by Your radiance in the days of the Catastrophe which destroyed the evildoers of the world. Keep us and protect us in the Truth and the Light."

Kris heard the echo of his words ringing in the empty auditorium.

The priest raised his crossed arms again. "May the Great Light illumine you as He does the world."

"And may He guide us in the Way and the Light," Kris responded.

The young priest turned to the altar again. The glowing spot of the Image was approaching the Central Pit.

The sixteen acolytes stepped up to the altar, each one carrying a small bronze box. The priest bowed again to the shining Image and took a large bronze cup from its receptacle on the altar. Then he turned to the acolytes, facing the auditorium again.

"O Shining Holiness," said the priest, "Accept these, the gifts of the Clans, as the Sacrifice which You have ordained."

Each of the acolytes opened his small bronze casket and took a pinch of the powdered herb that it contained. The pinch of powder was reverently placed within the bronze cup held by the priest. Each of the acolytes went in turn, the order of the Clans corresponding to the order

of the years in a Cycle of sixteen.

Then the priest held the cup of herbs above his head, faced the great shining lens in the roof, and spoke a brief prayer of offering. After a moment, he turned and placed the cup in the Central Pit, taking care not to obscure the light from above, which was moving slowly toward the center.

The young priest again looked out over the empty Temple.

"Who are you who come to pay your respect and worship to the Great Light?"

It was the moment that Kris had been waiting for. He stood, and, reading carefully from the Book of Liturgy, he answered the question, putting his own name in the proper place.

"I am Kris, son of Kym, of the Clan of Yorgen. I come this day to say to the Great Light: I have done wrong, O Holy Light; I have done wrong against Your Law and against the Way of our Ancestors. But I say that I have intended no wrong against You, and I say upon my honor that I will avoid such wrongs in the future. I ask your blessing, O Great Light, that I may never do wrong again."

His voice was strong and powerful in the great room, and it sounded even louder than that of the celebrant.

The priest seemed not to notice. He crossed his wrists in supplication and said: "You are pardoned for your error in the effulgence of the Great Light."

He turned back to the altar.

At that moment, the focus of rays from the Great Light struck the Central Pit and the cup of powdered herbs that lay within it. For several seconds, nothing happened. Then, the herbs began to smoke, sending a pleasant aroma through the Temple. At last, the powder burst into a green flame. It flickered for nearly a minute, and then died.

The service was over.

XIV

When he stepped out of the Temple, Kris saw Dran peDran waiting for him. The little Bronze Islander leaned from the saddle of his deest and said, "Captain, Secretary Norvis is come from Tammulcor. He is wait for you at the Inn."

Kris nodded and mounted his own animal, paying no attention to the throngs of people that lined the streets leading to the Square of Holy Light. None of them had crossed the line of black-and-red-clad men who guarded the Square.

Kris signaled, and the Hundred Men fell into formation behind him, following him toward the Inn of the Purple Deest.

Norvis peKrin Dmorno was waiting in the banquet room. He was just finishing his midmeal; across the table from him sat Marja geDel Vyless. The girl saw Kris first, and she stood up with a happy little cry when he entered the room.

Norvis stood too, extending his

hand. "You did a beautiful job, Kris. All Nidor is talking about the great Kris peKym who drove the devils out."

"You were wonderful, Kris peKym," said Marja, holding his other hand tightly. There was a light in her eyes that Kris had never seen before.

Kris eased himself into a plush chair. "What brings you here, Norvis?"

The secretary grinned. "In the first place, we wanted to bask in the reflected light of your glory; in the second, we thought you might need a little money."

Kris returned the grin. "It would not hurt anything. Is there anything left in the treasury at all?"

Marja looked at him with shining eyes. "There's more than you can imagine, Kris peKym. You've made more money for the Party in a year than my father made in fourteen."

"Donations?" Kris asked.

She shook her head. "Some of it, of course. But most of it is the money you got for us."

"The Dimay scrip," Norvis said. "Since all that cobalt went back into the Bank of Dimay at Tammulcor, the notes that you bought at two for one are now worth their full value. We're twice as rich as when we began."

"Good," Kris said. "We've got quite a bill here at the Inn. It wouldn't bother me in the least to tell the manager he owed it to us, but I think it's better to pay it, as long as we have the cash."

"I'll take care of it immediately," Norvis said.

Kris turned to Marja. "How are things with you?" he asked. "It's a long ride from Tammulcor. Tired?"

"We didn't ride; Norvis brought the *Krand*."

Kris nodded. "And how's your brother?"

"Ganz is fine," the girl said. "He's really doing things in Tammulcor."

"Just a second," Kris said. "How come you came up on the *Krand*?"

Norvis spread his hands. "How else could we bring a few hundred thousand weights in cash? On deest-back?"

"You're right," Kris admitted. "Where's she docked?"

"Number Three Pier. I gave half your crew liberty; they wanted to see Gelusar. I hope that's all right."

"Certainly," Kris said.

"Good. What are your plans now?"

Kris leaned forward. "I've got it all figured out. Actually, we don't know if the Earthmen will ever come back or not. We'll have to make sure that if they do we'll be prepared for them. So I've sent a message to Elder Grandfather Kiv peGanz, telling him that I want to talk to him about the running of the Council from now on. The Merchants' Party should have some kind of voice in the government."

Norvis nodded slowly. "Yes. Yes, I suppose that's best. What did he say?"

"I haven't heard yet; he hasn't replied. I imagine the old gentleman's still a little shocked by what happened to the Bel-rogas School."

Marja blinked at him. "But I thought you were just at the Great Temple. Weren't you seeing him?"

"No," Kris told her. "I went to the midday service. There was no one there but me, and the priest was just a young man. I doubt if any of the Elders will be conducting services themselves until the next feast day."

Norvis stood up from the table. "Everything seems to be nicely in hand now," he said. "I guess I'd better go back to the *Krand* and pick up a little of our ill-gotten gains. I didn't want to bring it with me until I knew for sure how much you needed."

"Just enough to keep us here at the Inn," Kris said. "A hundred men and -deests can eat a lot of food."

"I'll take care of it," Norvis assured him, as he turned and walked out of the room.

Kris followed him out with his eyes and then looked back at the girl. Just for an instant, he was a trifle startled. She had her elbows on the table, and her chin was cradled in her palms. She was staring at him intently.

"What's the matter?" he asked lightly. "Do I need a bath or something?"

She flashed white teeth in a bright smile. "Something, perhaps, but not a bath. You look very fine—very

handsome. You know, you're a very wonderful man, Kris peKym."

Kris smiled a little. "In all modesty, I must admit that you are perfectly correct, my dear."

"Say that again," she said.

Kris shrugged amiably. "In all modesty—"

"No," she interrupted. "Not that part. Just the 'my dear.'"

Kris cocked his head to one side. "I do believe that you have something simmering inside that pretty head of yours. Have I been so busy with my work that I've missed something?"

Marja's eyes crinkled at the corners. "Actually, I haven't had a chance to talk to you since I've known you. It's been Earthmen, Earthmen, Earthmen. But now that they're gone, maybe you can find time to pay attention to other things."

Kris realized suddenly that he *had* been too busy to see something that had been right in front of him for a long time. "You know," he said slowly, "I think you've got a point there."

Loudly reverberating thunder sounded in Kris' ears. He blinked his eyes open, and the thundering resolved itself into a pounding on the door of his room.

He sat up in bed. What was going on? He'd left two men at the door with orders that he wasn't to be disturbed. He thumbed the sleep out of his eyes and pushed himself out of bed.

"Who is it?" he called.

"Norvis peKrin."

Kris opened the door just a crack. "What in Darkness do you want?" he growled irritably. Then he saw that Norvis was not alone; he was accompanied by Grandfather Marn peFulda Brajjyd, the Priest-Mayor of Vasheor. "Your pardon, Grandfather. I didn't see you. I'll be out in a minute."

He dressed quickly and went out into the hall, closing the door carefully behind him.

The Grandfather and Norvis were both smiling. *No trouble afoot*, Kris thought, relieved. "What is it?" he asked, straightening his vest.

"My blessing," said the Grandfather. "I have a message for you from the Ancient Grandfather, the Elder Kiv peGanz Brajjyd."

"Oh?" Kris said softly. "What does the Elder Grandfather want?"

Marn peFulda clasped his hands on his chest. "You and your Hundred are to appear this morning in the Square of Holy Light, at the Hour of Second Prayer. The Elder Grandfathers will address you then."

Kris folded his arms, a half-smile on his lips. "Do you have any idea what they have to say?"

The Grandfather shrugged slightly. "I can't say, officially. All I was told was that you, Kris peKym, having done something which has come to the attention of the Council, should be given the award you have earned."

Kris repressed the urge to grin happily, and instead merely inclined

his head. "I thank you, Aged Grandfather."

"You're becoming quite an important man, Kris," Norvis said. "I went down to the *Krand* this morning and found that a third of the crew are missing. Evidently, they're having a time of it in town, bragging that they are the crew of the great Captain Kris peKym Yorgen."

Kris smiled. "I'll hang 'em by their feet from the yardarm if they show up too late. After I break open a few kegs of beer, of course. Let's go. Will you come with us, Aged Grandfather?"

Marn peFulda bowed. "I will, my son. It will be an honor."

The Hundred Men rode grandly into the Square of Holy Light. This time, there was no need for them to guard the entrances for their captain; each of the streets was blocked by Peacemen. Even the Uncle of Public Peace of Holy Gelusar was there, standing importantly just beneath the balcony.

Kris glanced up toward the steeple and saw an acolyte waiting there, mallet in hand.

That's good, he thought. I won't have to get Dran to ring it this time. He forced the smile from his face and moved his deest toward the balcony.

The Hundred Men arrayed themselves behind him. From the windows of the buildings that surrounded them, faces peered out, and Kris could see the yellow robes of acolytes of the Temple ranged all

around the Square, looking down from the roofs of the surrounding buildings.

Kris stopped his animal just beneath the balcony. Reverently, he bowed his head in silent prayer.

The gong sounded.

Kris raised his head as the shutters of the balcony slid open.

The scene was strangely like that of the questioning of the Earthman—except that Smith was missing. Otherwise, all was the same. The Elders were clad in full dress; chains and coronets gleamed in the bright morning light. The sixteen old men made an imposing group, there on the balcony.

The Elder Grandfather Kiv peGanz stood up. Looking past Kris, he seemed to glance out over the crowd. He raised his arms, pronounced a blessing, then peered downward almost directly at Kris.

"Four days ago," Grandfather Kiv said solemnly, "a band of citizens, led by Kris peKym Yorgen, stormed the Bel-rogas School of Divine Law, destroyed it, and drove off the Earthmen."

Kris nodded. *Yes, yes, he thought. And when do they call me up and pin the medal on me?*

Suddenly, the Grandfather said sternly, "Since that time, we of the Council have received additional knowledge about Kris peKym."

There was an odd note in the Grandfather's voice. Kris looked long and hard at the old man, and he felt his lips growing dry. New knowledge about him? What did

that mean? How much did Kiv actually know?

Grandfather Kiv peGanz looked down, and for the first time allowed his gaze to rest upon the face of the young man on the deest.

"Kris peKym Yorgen," he said, in a voice that carried loudly across the Square of Holy Light, "we have brought forth proof—absolute and undeniable proof—that you and your men were the ones who robbed the Bank of Dimay, that you and your men buried the metal on the campus of the School of Divine Law. We have incontrovertible proof that you have committed what is undoubtedly the foulest crime that has ever been done on Nidor.

"Therefore, Kris peKym Yorgen, I order your arrest in the Holy Name of the Great Light—on

charges of sacrilege, blasphemy, murder, and high treason! Surrender for trial or die!"

Kris froze for an instant, unable to believe what he had heard. Wildly, Kris looked around him and saw that he had been trapped. All plans were smashed now; the vast and fantastic hoax he had planned had somehow been unmasked.

He glanced up. The acolytes and the Peacemen who surrounded the Square had been armed with rifles. At least two hundred firearms were leveled at him from the windows and the roofs of the buildings around him.

"We have you, Kris peKym," said the Elder Grandfather. "Surrender or I'll have you cut down like a psych-bean at harvest time!"

TO BE CONCLUDED

THE ANALYTICAL LABORATORY

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THE EDITOR.



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BY P. SCHUYLER MILLER

ATOMIC FISSION

When an atom of Uranium 235 or Plutonium fissions, it splits into two roughly equal parts. It was the discovery of this difference between fission and ordinary radioactivity by Hahn and Strassmann, in Berlin, back in 1938, that suddenly made it clear to physicists all over the world that atomic energy might be released and controlled. Now, eighteen years later, the use of atomic energy has also fissioned into what we can hope are at least equal parts—peaceful power vs. the bombs. Three recent books tell the story of

how this situation has developed, and where it may go.

Arthur Holly Compton's very personal narrative of the development of the United States atomic energy program, "Atomic Quest" (Oxford University Press, New York, 1956, 370 pp. \$5.00), makes the personal and practical problems of the Manhattan Project and its forerunners clearer than any other book I have seen. One of Compton's British counterparts, P. M. S. Blackett of Imperial College, London, discusses the military importance of atomic armaments in "Atomic Weapons and East-West Relations" (Cam-

bridge University Press, 1956. 107 pp. \$2.00). And Kenneth Jay, a British science writer, tells rather ploddingly the story of what led up to the launching of the first commercially useful atomic power plant in "Calder Hall" (Harcourt, Brace & Co., New York, 1956. 88 pp. \$3.00). The three books complement each other nicely.

The outlines of Arthur Compton's story are probably familiar to most of you. What you gain from the book is the insight of a top physicist, a top educator, and a religious man, into the forces that produced the bombs at Hiroshima and Nagasaki, and gave birth to the world in which we are living.

By a coincidence, a group of amateur archeologists—two chemists, an ex-entomologist, and I—were discussing the other night a point which is brought home very strongly in the early chapters of "Atomic Quest." That is that the whole place of physics, and indeed the nature of physics, has changed radically in our generation—in fact, since 1939. Before the war there was only a handful of top-notch physicists in the world. Most of them had university professorships, and most of the second-rank men had the instructorships. A very, very few were in industry. A few were in government laboratories here and there. Job placement officers in colleges were inclined to tell students bluntly that they'd better major in something else: there were no jobs.

One result of this was a closeness

of ties among these men and women which was very much like what you find among science-fiction writers now. Most of them knew each other personally, from attendance at conventions. They followed each other's work. They corresponded freely, passed news along, exchanged ideas on an international scale. Reading through Compton's account of the spread of knowledge of the Hahn-Strassmann discovery, its prompt confirmation in other laboratories, the simultaneous realization of what it meant and could mean—you will find that the men named are men whose names are familiar to you, even though you know nothing about their actual work. They are the handful of men whose names got into the press whenever there was a new story about physics, because they were the men doing the pioneering work.

Today one large industry such as General Electric or Westinghouse employs more physicists than existed in America or in the world before the war. And the "physics" with which they are concerned wasn't taught and in great part didn't even exist when I was in college. (The neutron was discovered a year after I graduated.)

Why this had to happen is Dr. Compton's story. It is calmly told, with no conscious dramatics, but it is nevertheless a very dramatic story. You will come to understand why the complexity of modern physical research has brought emphasis on research teams rather than individual

probing, with all the co-ordination problems that necessarily follow. You will understand better, I think, why many of the men who worked to create atomic bombs before Germany should do so, were convinced that we should not use ours, once we knew Germany did not have it. And you will get an inkling of how the present strait jacket of secrecy is hampering the advance of research, even as the "club membership" among pre-war physicists made the atomic program possible.

Atomic power has been used in this country, more as a publicity stunt than anything, but since October 17th England has been operating the world's first paying atomic power plant. The reason, of course, is economic: in England, water power is scarce and coal is so expensive that atomic power can compete, on a cost basis, with steam. In fact, today's *New York Times* reports that the margin is even more in favor of uranium than the designers of Calder Hall had supposed: for still unknown reasons, they are getting more power, faster, than they had expected.

The story of the planning of Calder Hall, as Kenneth Jay tells it, is a dead-level engineering story with none of the hurrah that an American journalist might have written into the story. British understatement, let's say. Let's have an example of a paragraph that is about his extreme in sensationalism, the description of the reactor: "... Like a great boiler

drum, the size of two houses stacked one above the other, domed top and bottom, with a forest of pipes sticking out, like pins in a pincushion, from the upper dome; stuck to the bottom dome is another drum . . . not much bigger than a railway locomotive." Inside the reactor are more than a thousand tons of graphite—its ultra-purity may account for the unexpectedly high yield of neutrons—and over ten thousand uranium rods, enclosed in spirally finned magnesium cases whose uneven warping causes a serious problem. A seven-foot-thick concrete shield surrounds the steel pressure-tank, a six-inch steel heat-shield inside it. And the whole had to be built with *no* construction blunders, *no* loopholes for future accidents.

Calder Hall is a breeder reactor, or rather two reactors, each of which will convert some one hundred seventeen tons of natural uranium into about four hundred forty pounds of plutonium a year, and will generate some seventy million watts of electricity in the process as the carbon dioxide gas used to cool the pile is circulated through a two-way—high-pressure and low-pressure steam—heat exchanger. Whether the plutonium or the power is the by-product will depend on some of the military and social questions Professor Blackett discusses in his little book, whose three parts were delivered as a series of lectures at Trinity College, Cambridge, about a year ago. The three sections deal, respectively, with Western military policy,

the atomic arms race, and the author's ideas of the consequences.

One comparison might be made now between Blackett's book and Compton's, on the question of why we bombed Hiroshima. Of course, it may be decades before all the records are clear, but whereas Blackett holds that Japan would have surrendered in days, Compton cites good evidence, gathered by him personally to find an answer to Blackett's questions, to show that the Japanese Army would never have permitted a surrender or honored one, and that the invasion of the Japanese homeland which would have been necessary without the A-bombs would have cost more lives than were lost in the bombings.

The disturbing—or I should say the most disturbing—thing that emerges from Blackett's analysis is the possibility that in an atomic war the civilian population may have to be written off as expendable. Nowhere in Western Europe or the United States, he says, is there any serious attempt to develop a workable civil defense program to cope with the atomic bombing of cities. This may be inertia, politics as usual, let's not do anything unpopular—or it may be that the military have decided nothing effective can be done, so why use the time and money trying?

Now that both Russia and the United States have H-bombs, and reasonable certainty that they can be delivered without effective defense, can Russia blackmail Western Europe

into abandoning NATO, pushing United States forces back to our shores, and giving the Soviet its way in the once-colonial sectors of the world? Questions like these, which Blackett raised in the spring of 1956, may have been answered before you read this in the spring of '57. Apart from these life-and-death details, Blackett's book is one more pointer toward the lesson of Orwell's "1984" and of too much other science fiction to name: that to cope with a totalitarian power which is technologically equal to ourselves, we may become totalitarian ourselves.

TOMORROW'S WORLD, by Hunt Collins. Avalon Books, New York. 1956. 223 pp. \$2.50

So far as I know, this is an original: no magazine credits are given, and nobody in my immediate circle has been able to identify a magazine source. And it's at the same time oddly annoying and oddly effective as a picture of a future grown out of our own.

This is a world in which vicarious living has reached a peak, with national control by the Vicarions ("Vikes") and a bitter opposition by the Realists ("Rees"). In the Vike pursuit of effortless illusion, narcotics have not only been legalized, they have been systematically woven into society in a way that's a notch beyond our current TV beer advertising. There's a Vike brand of

jive talk that is enough like today's rock-and-roll argot to be intelligible, and obscure enough to be challenging or annoying. Sex has become wholly vicarious in Vike circles, who look on Ree expressions of the former norm as disgusting and decadent. (The publisher, I'm sorry to say, had to ignore Vike styles in women's dress: perhaps the PB publisher will feel less inhibited.)

The conflict between Vike and Ree is nicely built up through the struggle of Van Brant, literary agent, to put over Indi-Sensos, an innovation in entertainment in which men vicariously experience the male parts, women the female parts, and at the same time fight off the legal maneuvering of the Realists, who hope to put the entire entertainment industry out of business. A variety of personal conflicts are convincingly woven through the pattern, which is never overdone and never too obvious.

You may not like the society that's pictured, and you may not find the writing as convincing as in "1984" or "The Space Merchants," but it's a good job, up, down and across the board.

TIME FOR THE STARS, by Robert A. Heinlein. Scribner's, New York. 1956. 244 pp. \$2.75

I wish I knew why Robert A. Heinlein's teen-age science fiction for Scribner's is so much better than his recent "adult" fare. I read this within a few days of his newest

serial, which will be out in hard covers early in 1957, and the tally is all in favor of "Time for the Stars," which is right back with the best. ("Tunnel in the Sky," its predecessor, is the one slight lapse in years.)

Tom and Pat Bartlett are twins and telepaths, and when the time comes for the starships to set out, they are in a great company of similarly gifted twins who make communication possible over the light-years and the generations. One twin on a ship, one back on Earth, they keep the stellar fleet tied to home—though years go by while months pass on the ships at their near-light speed. As you might know, Heinlein doesn't let this gimmick stand: he develops it in all its implications and potentialities, plays around with weird creatures on strange planets, works in a little of the psychology of the "strange bed-fellows" such an arrangement must make, and even draws out of it a possible faster-than-light drive.

"Juvenile" or not, this is recommended unreservedly as better than the next Heinlein adult book you'll see.

THE SECRET PEOPLE, by Raymond F. Jones. Avalon Books, New York. 1956. 224 pp. \$2.50

The salvation of hard-back science fiction may be the appearance in the field of small publishers like this, whose overhead is not so great that they have an impossibly high "break-

even" point in sales, but who have better distribution channels than the specialty houses like Gnome and Fantasy Press. If they can make a little money out of science fiction—that is, good science fiction, and original science fiction—comparable to what they can expect from a good mystery, then all the funeral orations may be premature.

So far as I know, this is an original novel in the sense that it is not a reprint from a magazine. Beyond that point, the originality is nil. It's a smoothly constructed mosaic of just about every element that anybody has ever used on the mutant theme, from the monstrous "Uglies" to the hidden super-race. It certainly won't excite experienced readers, but it may capture a few beginners.

We are taken into the familiar post-War III world in which radiation is scrambling genes and producing deviates, who are ruthlessly weeded out by the Genetics Bureau. Nobody with the slightest variation in his gene pattern is allowed to mate. But we know from the opening page that somewhere underground in this regimented world is another world of the "secret people," non-Ugly deviates who are linked together telepathically, with each other and with their mysterious Father, who guides their lives from invisibility. And presently we discover that Robert Wellton, Chief of the hated Genetics Bureau, is this Father in truth and in spirit. A "successful" deviate himself, he has used his Bureau to literally father

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the new people. But a colleague suspects him—and so the plot is spun, the wheels are turning, and a pretty predictable story is under way.

THE TESTIMONY OF THE SPADE, by Geoffrey Bibby. Alfred A. Knopf, New York, 1956. 414 + pp. \$6.75

This book, by a British archeologist working in Denmark, was commissioned by Knopf as a companion book to its runaway success, "Gods, Graves and Scholars." I came to it with a chip on my shoulder, because I had—as a minority of one—disliked Ceram's method of drawing a picture of prehistory through the more sensational facets of the lives of certain great archeologists. The chip is gone: "The Testimony of the Spade" does for northern Europe—out of the Mediterranean basin—what "Gods, Graves and Scholars" should have done for the heart-world of the sources of civilization.

What's more, I am prepared to admit that this is probably the way the book should have been written. I'd have liked a chronological ordering of European prehistory, from the Ice Age to the Roman incursion, more on the order of Gordon Childe's masterly syntheses—but that wouldn't have sold to the general reader, because he wouldn't be able to see the woods for the trees, the reconstruction of early times for the details of ax-shapes and pottery-decorations. That there are so few

books like Childe's—and Bibby's—is proof that even the professional archeologist finds it hard to see the total picture.

Instead, we get several things at once. We learn how archeology was born and grew as a science in Europe, what obstacles it has faced and how it has overcome them. We meet the men, for the most part what a modern ethnologist calls "part-time scholars," whose intelligence, diligence and enthusiasm uncovered the key facts and the basic principles in the reconstruction of life in ancient Europe. We catch some of the excitement of those early discoveries—the child's first vision of the wonderful painted bulls of Altamira—the uncovering of the lake dwellings of Switzerland—the excavation of the Viking ships—the fantastic cemetery of Hallstat. We are shown how excavation and correlation have, bit by bit, traced the story of Man's adventuring in the empty forests of Europe, and how they have proven that the emptiness was an illusion. And, now and then, we get glimpses of life in those long-gone times.

Egypt and Mesopotamia, Greece and Rome, have had scores of popularizers, good, indifferent, and downright bad. But Stone Age and Bronze Age Europe have been neglected, for about the same reasons that America outside the regions of the high civilizations, from Mexico to Peru, has been neglected. The archeology of Europe wasn't spectacular enough; the classicists considered it

unimportant. Didn't the Greek and Roman writers say in so many words that there were only savages north of the Alps? So it has been only recently that the story was uncovered. When we consider that it is the story of the ancestry of most of us who come of European stock, except the Greeks, Italians, Spaniards, and a few others, we can be ashamed that it hasn't been told before.

There has been a spate of archaeological books recently, good and bad, most of which I've been buying and some of which I expect to describe in more length. Still, I can't run you down by riding a headstrong hobby, so I'd like, in passing, just to recommend three more books in the field. As a reference book on the Old Stone Age, the thousands of years when men in Europe first learned to make and use stone tools, there is a new United States edition of a book that has been a standby since 1933, "The Old Stone Age," by Miles Burkitt (New York University Press, 258 pp. \$3.75). Needless to say, the new edition is brought up to date, since the author is one of the top Cambridge archaeologists. André Senet, a French journalist and science writer—he edits "The Science and the Future," a French magazine which I've never seen—in "Man in Search of His Ancestors," (McGraw-Hill, 274 pp. \$5.50), carries the anthropological search for our physical forebears around the world and back to the earliest times, sketching in the story of pre-human evolution back to the

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origins of life. He also tells his story more or less through the achievements of individual scientists, though of necessity more thinly than Bibby. This is more on the Ceram level, but better. Finally, if you're at all curious about the theoretical side of archeology—you might almost say the philosophical problems of interpreting the facts you dig up—look for V. Gordon Childe's "Piecing Together the Past" (Frederick A. Praeger, New York. 176 pp. \$3.95). It isn't easy going in places, and I think Childe complicates his usually lucid arguments by tagging new terms on his concepts, but some of you may be interested.

THE END OF THE WORLD, edited by Donald A. Wollheim. Ace Books, New York. 1956. 160 pp. 25¢

This original theme anthology of six short stories and novelettes could well have been longer, and might have been better if the editor had had more elbow-room. One obvious approach of such a collection is to show the variety of ends suggested by science-fiction writers, and there is little chance to do this within the compass of one hundred sixty small pages. As it is, three of the six stories use the eventual blowing-up of the Sun, one is scientifically unclassifiable, and one—to my way of thinking—isn't an "end of the world" story at all.

The first and most original con-

cept comes, as you might suspect, from Robert A. Heinlein with his "Year of the Jackpot"—from *Galaxy*—a very nice treatment of the study of cycles, in which the hero finds that a host of unrelated cycles are all going to peak at the same time. It has an extremely attractive heroine, too, who is introduced in the first line as she is stripping in the street outside a drugstore, where our hero sits moodily compiling catastrophe. This could almost be a companion-piece to Alfred Coppel's very short, very good "Last Night of Summer"—from *Orbit*—another kind of study of a man preparing for the Sun's explosion.

Third in line is Philip K. Dick's "Impostor," published here in 1953. This is the one on which I have reservations: it's a very well done puzzle-suspense yarn, but it's very clearly stated that *if* the hero turns out to be a robot with a bomb in his innards, the blast "will destroy everything for miles around." Civilization will go down the drain, maybe, but not the world—in spite of a qualifying last line.

"Rescue Party," by Arthur C. Clarke, was here in 1946 and is my nominee for second-best in the collection. You have probably read it several times: the story of a Galactic mission sent to rescue a shipload of representative people from the overlooked little planet, Earth, whose star is to go nova. With time growing ever shorter, the rescue mission tries to unravel the puzzle of what men were like and what happened

to them. Familiar or not, it's a "must" for this kind of book.

Amelia Reynolds Long's "Omega," on the other hand, hasn't much but an archaic novelty to recommend it. It comes from a 1932 *Amazing* and has its roots more in occultism than science. It may have been included for its vaguely "Bridey Murphy" approach, though the hypnotized subject visits the past and future through a kind of Dunne-sque overview of all eternity, rather than through reincarnation. And the end comes through a compounding of cataclysms that sounds more like *Revelations* than science, with gravitation operating at an angle and slowly shutting off, the stars moving around, and other prodigies occurring.

Edmond Hamilton's "In the World's Dusk"—*Weird Tales*, 1936—is also out of place in a science-fiction collection, for it is more a blend of Gothic sorceries than science. Here is an author who has probably ended more worlds, bare handed, than all the rest of science fictiondom put together. He rates a place in such an anthology, but surely there is a better choice than this one.

A SPACE TRAVELER'S GUIDE TO MARS, by Dr. I. M. Levitt. Henry Holt & Co., New York. 1956. 175 pp. \$3.50

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such purely scientific studies as Vaucouleurs' "Physics of the Planet Mars," this is by all odds the best popular book on Mars that I've seen lately. It should be: the author is Director of Fels Planetarium in Philadelphia, and, I gather, pioneered there in the "trip to Mars" sky-shows that most planetariums now put on every year. My chief regret is that there aren't more illustrations, and at least one double-page map of Mars to supplement the small drawings.

The content of these Mars books has to be just about the same, since they are all summing up essentially the same published knowledge about the planet and how to get there. (The international Mars Committee won't report on the 1956 studies until some time this spring.) This one is particularly complete and clear in its summing up of the details of Martian topography, climate, and the possibilities of life. Two appendices cover the problems of making a Martian clock, and the Oparin theory of the origins of life. And, I am happy to say, the entire book is about Mars: the author hasn't felt it necessary to use half his space for a primer of rocketry. If someone asks you this spring for one easy-to-read book "all about Mars," this is it.

PAPER-BACK REPRINTS

THE RULE OF THE PAGBEASTS, by J. T. McIntosh. Fawcett Publications (Crest Books). 192 pp. 25¢. The Doubleday edition in 1955 was called "The Fittest." It's the one in which animals, made super-intelligent and breeding true, make war on mankind.

THE BIG BALL OF WAX, by Shepherd Mead. Ballantine Books. 182 pp. 35¢. What the advertising world of 1992 will make of XP—the full-sensation "feelies"—plus a strip-tease evangelist plus the Momsday Rebellion. If you missed the Simon & Schuster hardback in '54, grab it now. It's top satire.

E PLURIBUS UNICORN, by Theodore Sturgeon. Ballantine Books. 212 pp. 35¢. Can you afford to pass up any Sturgeon book? There's a lot of unabashed fantasy in this—the title tale, "The Silken Swift," is one of the best unicorn stories ever done—but there's science with the sorcery. Thirteen stories that were a bargain in hard covers and are a steal in paper.

THE END

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(Continued from page 7)

but want only to extend themselves as themselves. They don't want to reproduce themselves; they want to extend themselves. The colonies are not to be daughter cells, reproduced by fission, but are to be extensions of the original self.

Six thousand years of history isn't enough to convince a culture; it doesn't work, hasn't worked, and won't work—but they keep right on trying it. If the colony seeks to separate itself and be a daughter cell, the original culture tries to slap it down—and usually does. Like many fish, cultures eat all their offspring they can catch; the only ones that live are ones that got away.

Reproduction by fission doesn't work under those circumstances; a colony that has only the cultural techniques of the mother culture is bound to be smaller, less wealthy, and hence readily overcome by the mother culture any time the original decides to engulf it. A child who has only the abilities his parent has cannot defeat the parent's efforts to overwhelm him.

If a colony starts up in an area

where there is already a native civilization, hybridization is possible. This will, of course, be obnoxious to the parent culture, since the colony shows disgusting signs of "going native," and taking on abhorrent noncultural traits. However, the hybridized colony is apt to take on some new characteristics that are highly efficacious. The result gives the parent culture a nasty surprise.

If A and B are fighting each other, and I learn all A's best tricks, and then learn all B's best techniques, it's a dead-snap bet that I can lick both A and B. The hybrid culture, having learned the best parental tricks, and the best native techniques, will quite likely give any parental efforts toward suppression a stingingly effective defeat.

Examples: the United States colonists using Indian tactics against the British Redcoats, and European guns against the Amerindians.

The net result is that, so long as cultures can't see their own future death, and hence can see no value in children, only hybrid cultures that develop a synthesis of a new and

the old culture are apt to survive. The United States survived, and grew strong and healthy, but primarily because, while Papa was a European, Mama was an Indian squaw. Culturally, we are the descendants of the Amerindian culture, as well as the European; if we hadn't been, we would never have developed into a powerful culture in our own right.

Cultures, mistaking themselves for God, are convinced of their own absolute perfection; hence any hybridization will appear as degradation of the Perfection of Being Right. Learning from any other culture is anathema; it is degradation and Evil, because it isn't God's (i.e., the culture's!) way.

It's notable that, whenever two cultures go to war, they will both assert with positive certainty that God is with them—that *this* is God's will. Naturally; the culture has itself confused with the Almighty. By definition, what God says is correct, is right. Consequently, the culture knows it's right, and can never err.

It has absolute proof of this; cultures that didn't follow God's way have all been destroyed, and since it is alive and strong, that proves that its way is God's way.

Cultures confuse tribal mores, with the Laws of Ethics, as a consequence. This gets their citizens even more confused; it's evident that the cultural mores *aren't* the great,

Universal Laws of Ethics, as they are claimed to be. It's then easy for the citizen to chuck the whole sour deal, and decide there aren't any Universal Laws of Ethics. When a culture says *it* is God, and a moderately intelligent citizen can observe quite plainly that it isn't, there's a tendency to decide that there isn't any God—simply a slightly moronic culture, that doesn't know it's not God, doesn't know it's mortal, and doesn't realize it needs its citizens as individuals.

The False Immortals can, as a consequence, do quite a job of throwing their citizens into utter confusion. Think how confused God Himself would be crossing an international border during a war and learning His mutually exclusive nature!

There are some signs, however, that some cultures are beginning to get glimmerings of the realization that "This, too, shall pass!" England, in the past, came nearer to getting some sort of bumbling understanding of that than any other national culture. The United States is acting, in many areas, in the right general direction—but with no apparent realization of the mortality of cultures.

But puzzle this one over: Given, that cultures are mortal, what should a wise, strong, and understanding culture do?

THE EDITOR.

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continued from Back Cover

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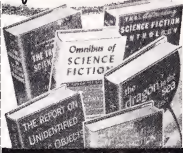
CAN YOU PASS THIS LUNAR QUIZ?

How much do you know about the Moon? Circle the answers you think are correct, fill out reverse side, and mail today for your Genuine Moon Tour Reservation Certificate.

1. Diameter of the Moon is: smaller — greater — the same as Earth's.
2. Since its gravity is weaker than Earth's, on the Moon you would weigh: more — less than on Earth.
3. The Moon is really a: star — satellite — planet.
4. Distance to the Moon is about: 93,000,000 miles — 238,000 miles — 9,000 miles.
5. Scientists have proved that human life does — does not exist on the Moon.
6. Surface of the Moon is rough — smooth — covered with water.

IMPORTANT: This application will NOT be honored unless filled out and signed on the reverse side.

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